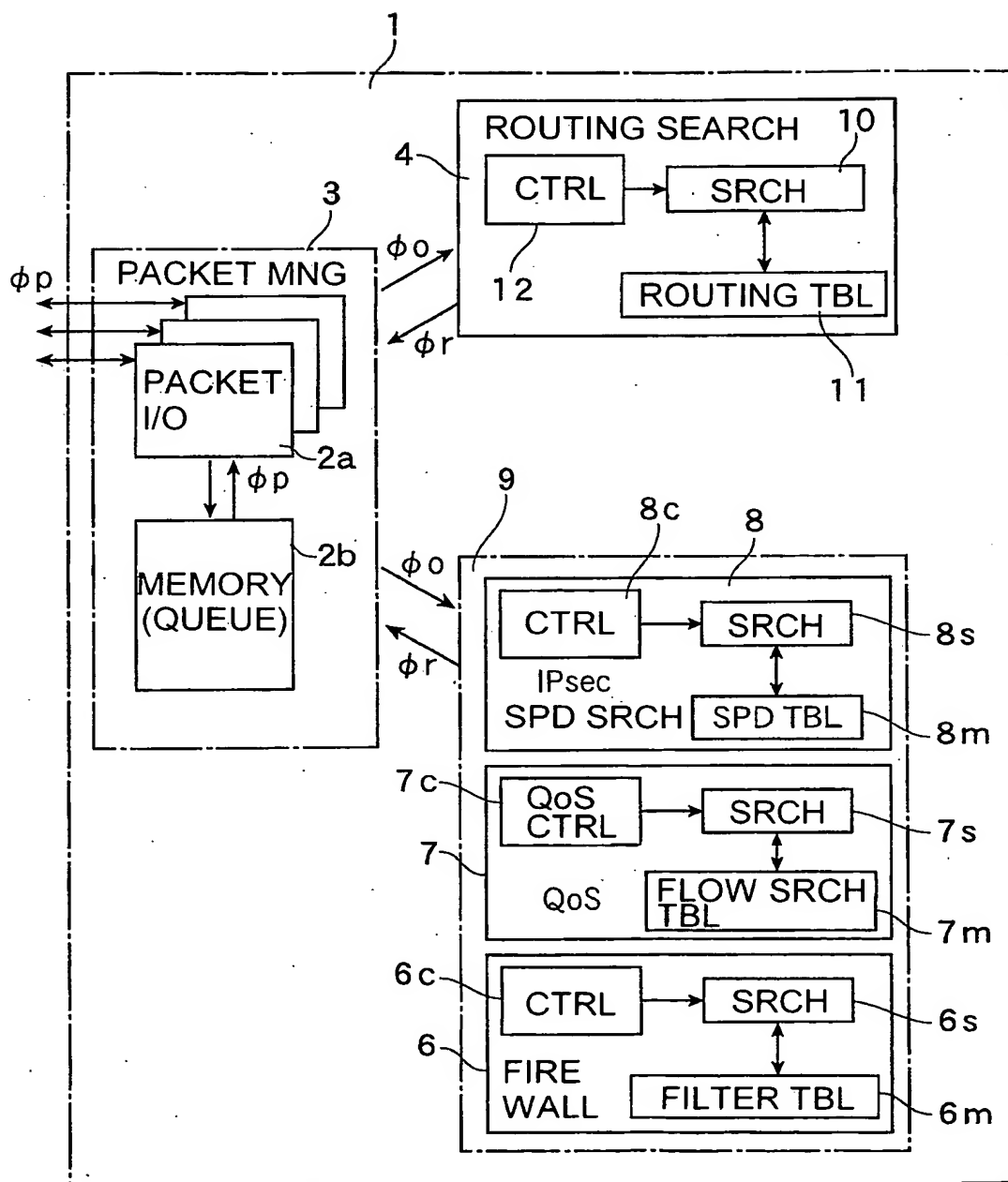


1 / 5 3

FIG.1



2 / 5 3

FIG.2

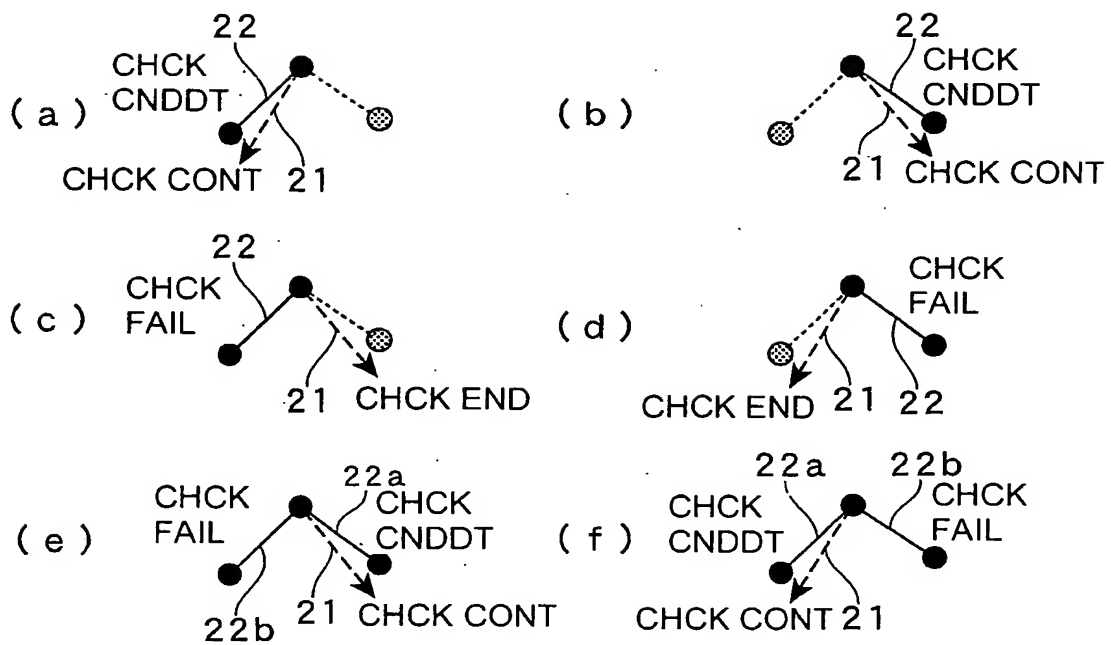
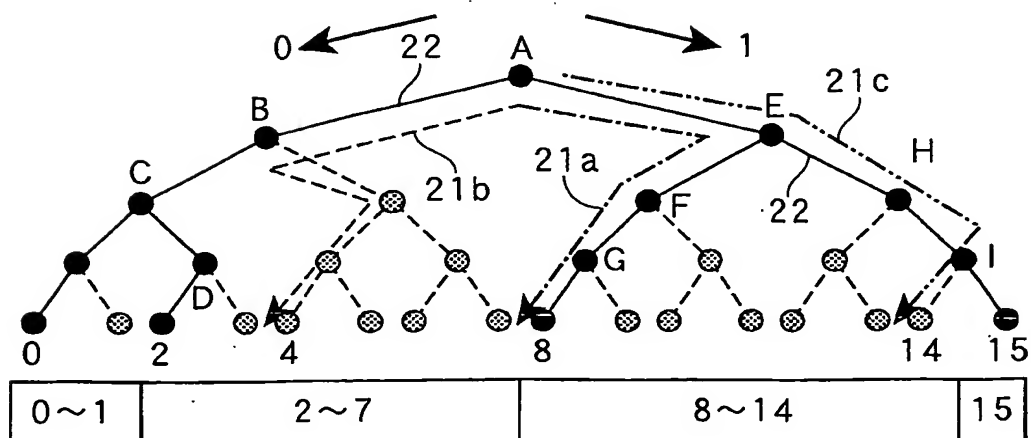
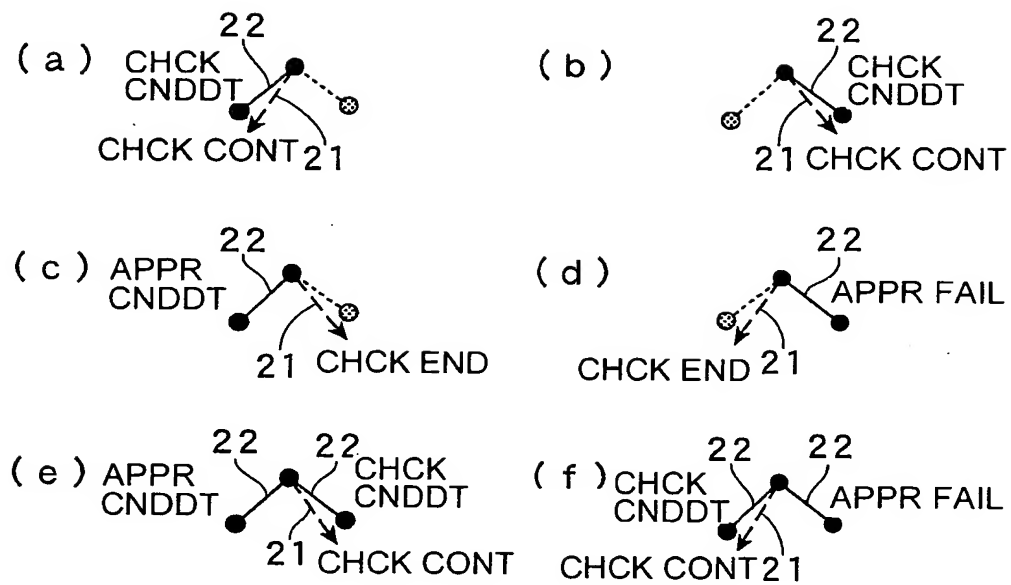
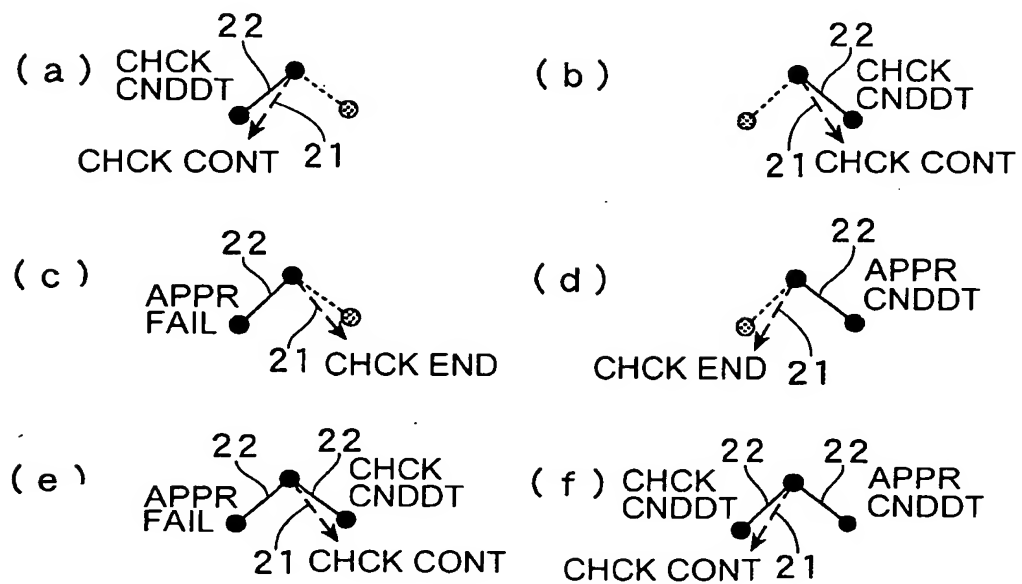


FIG.3



3 / 5 3

FIG.4**FIG.5**

4 / 5 3

FIG.6

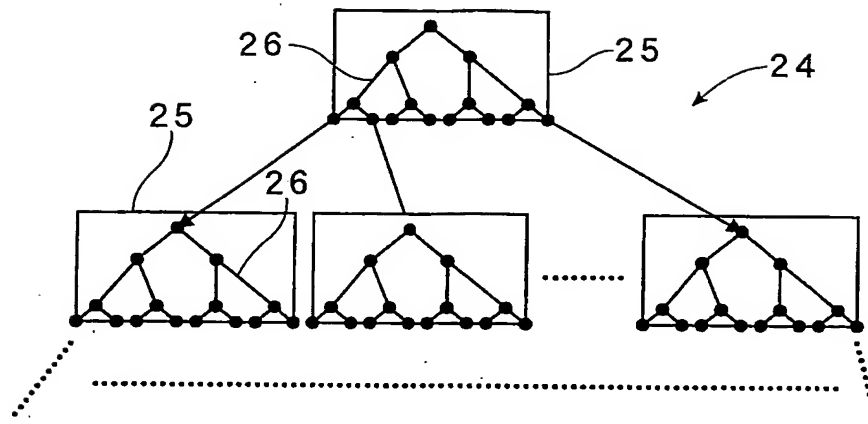
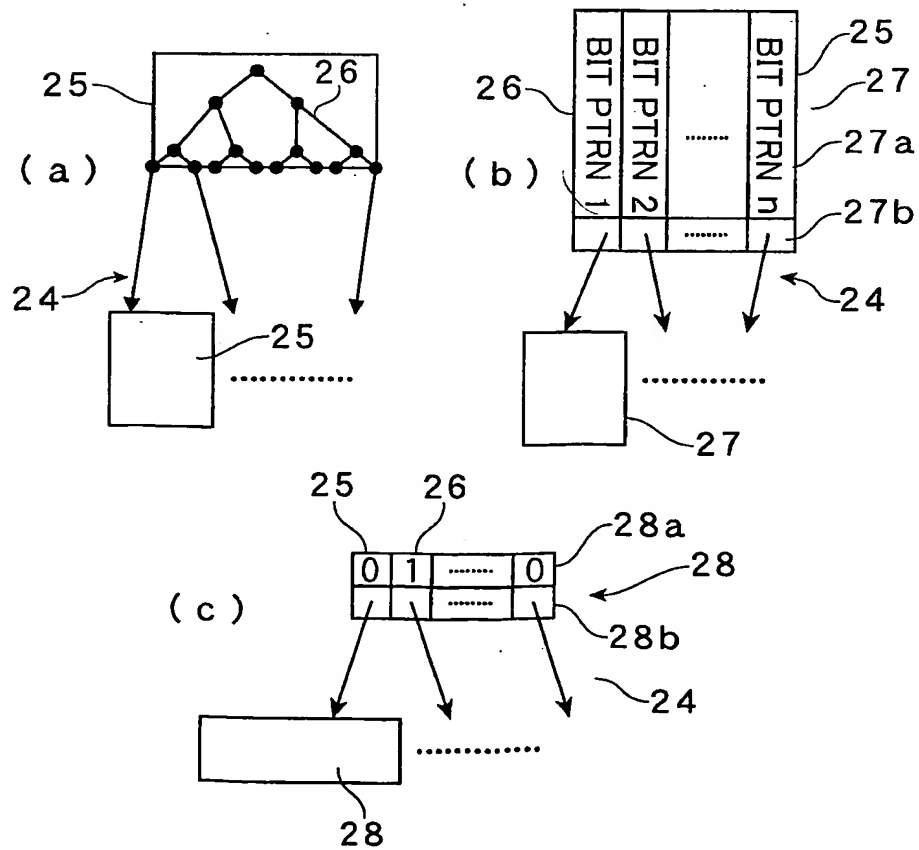
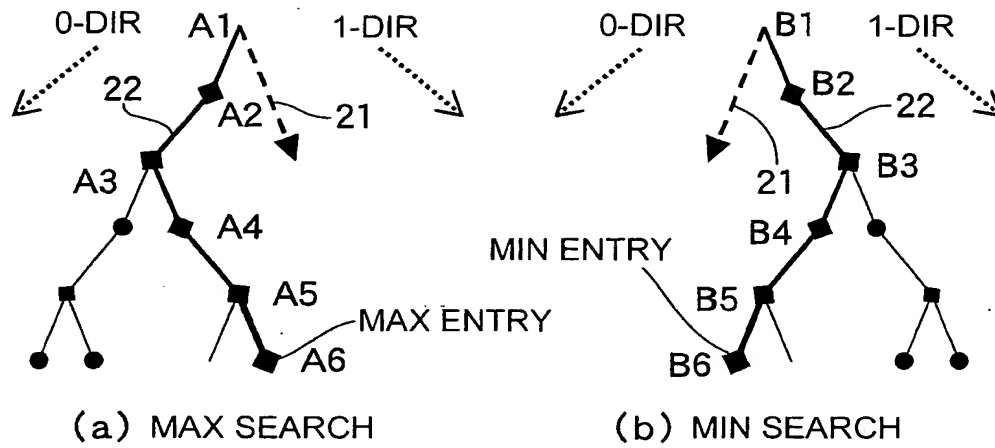
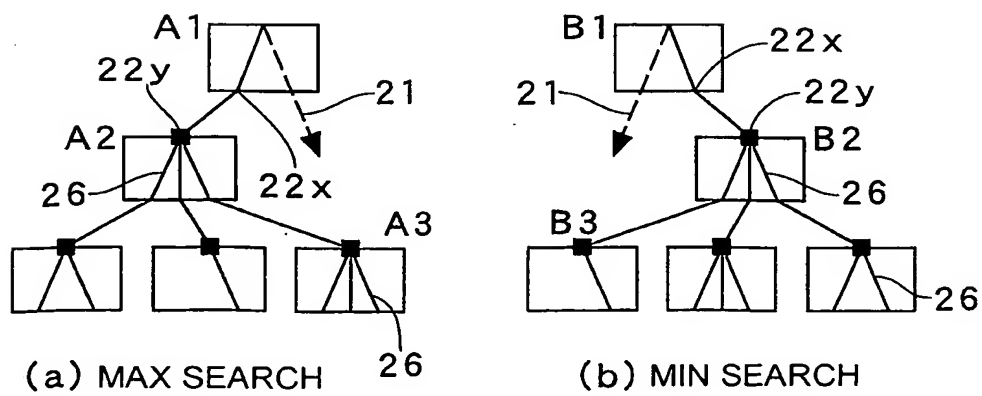


FIG.7

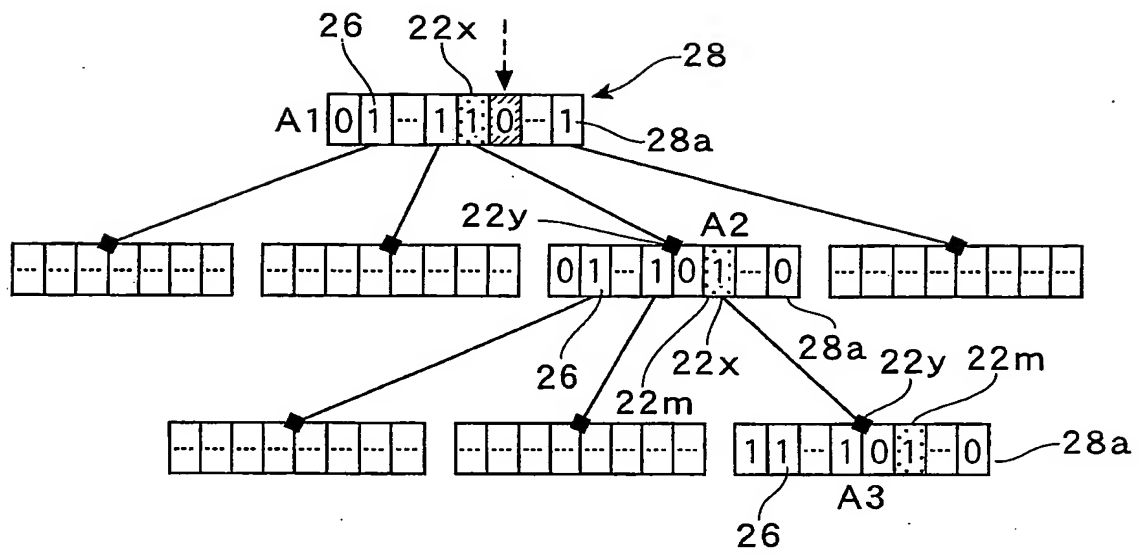


5 / 5 3

FIG.8**FIG.9**

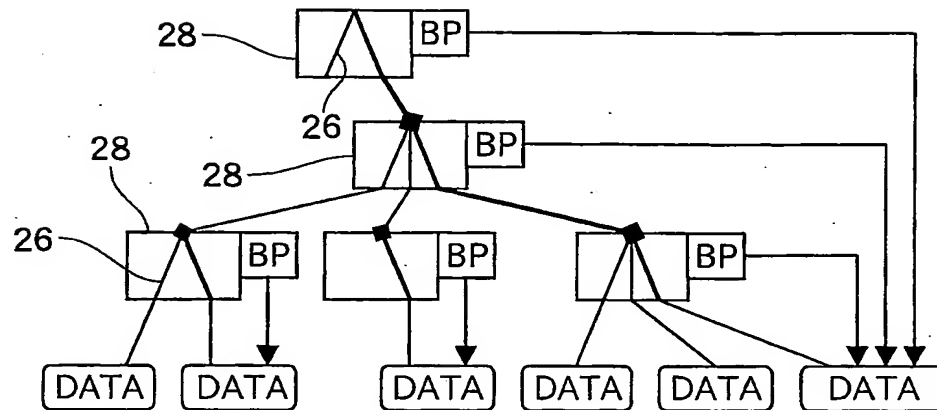
6 / 5 3

FIG.10

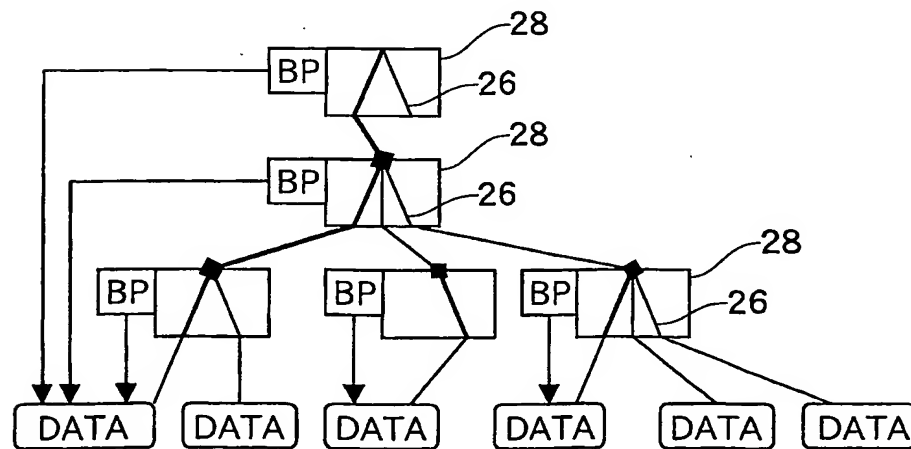


7 / 5 3

FIG.11



(a) MAX BYPAS



(b) MIN BYPASS

8 / 5 3

FIG.12

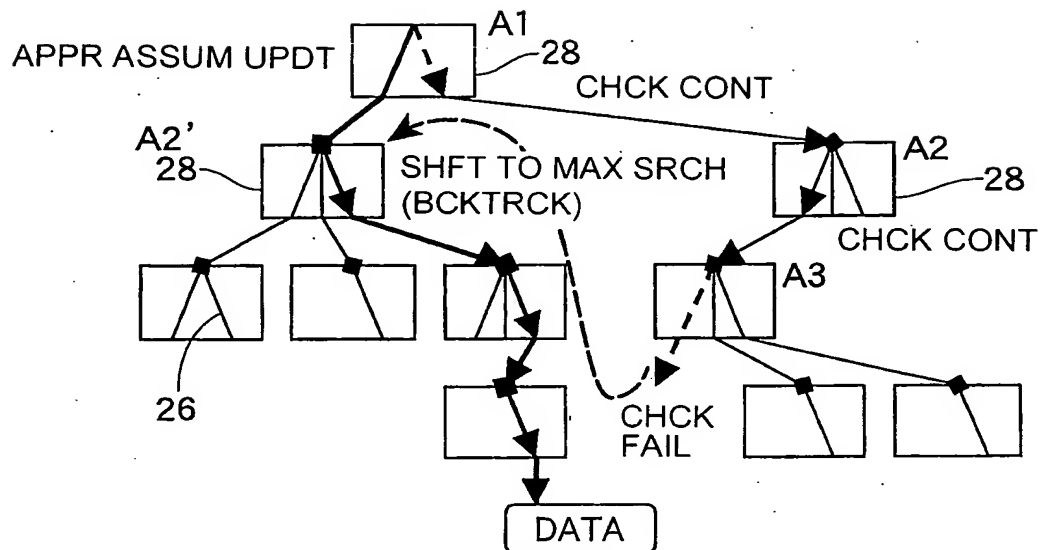
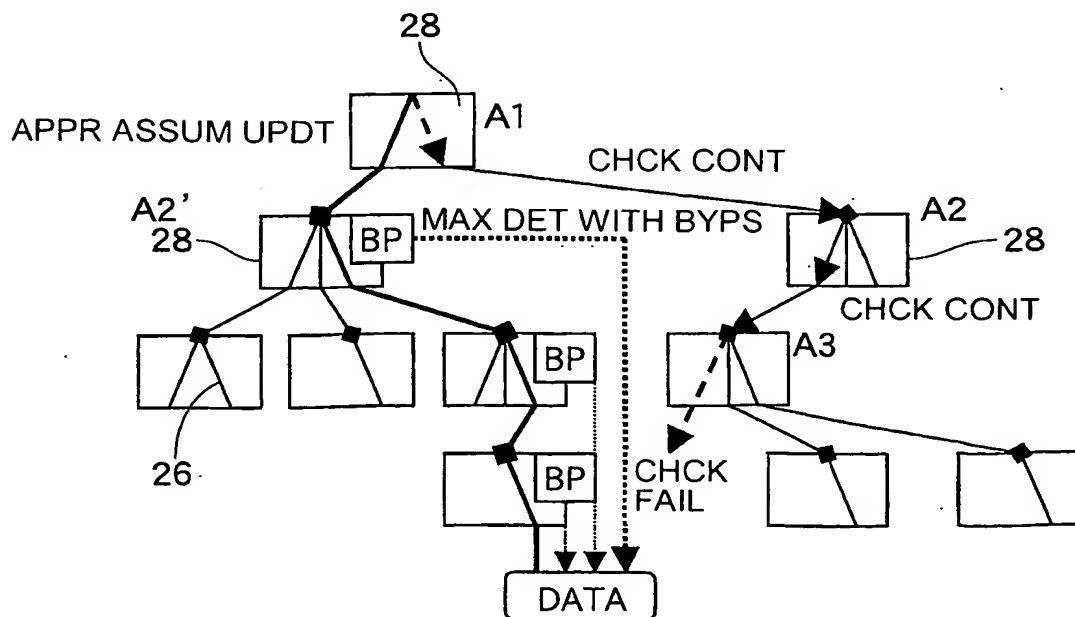
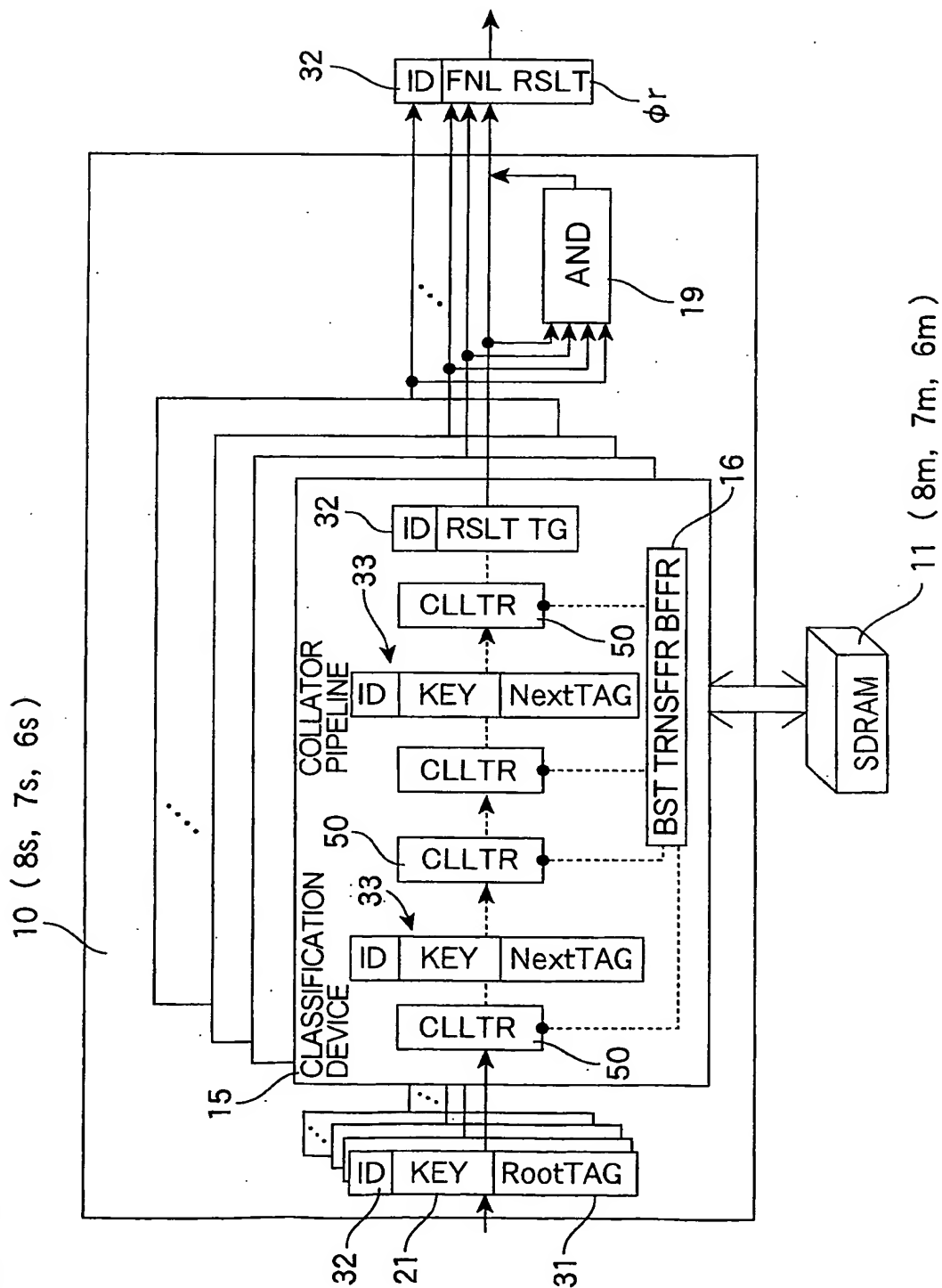


FIG.13



9 / 5 3

FIG.14



10/53

FIG.15

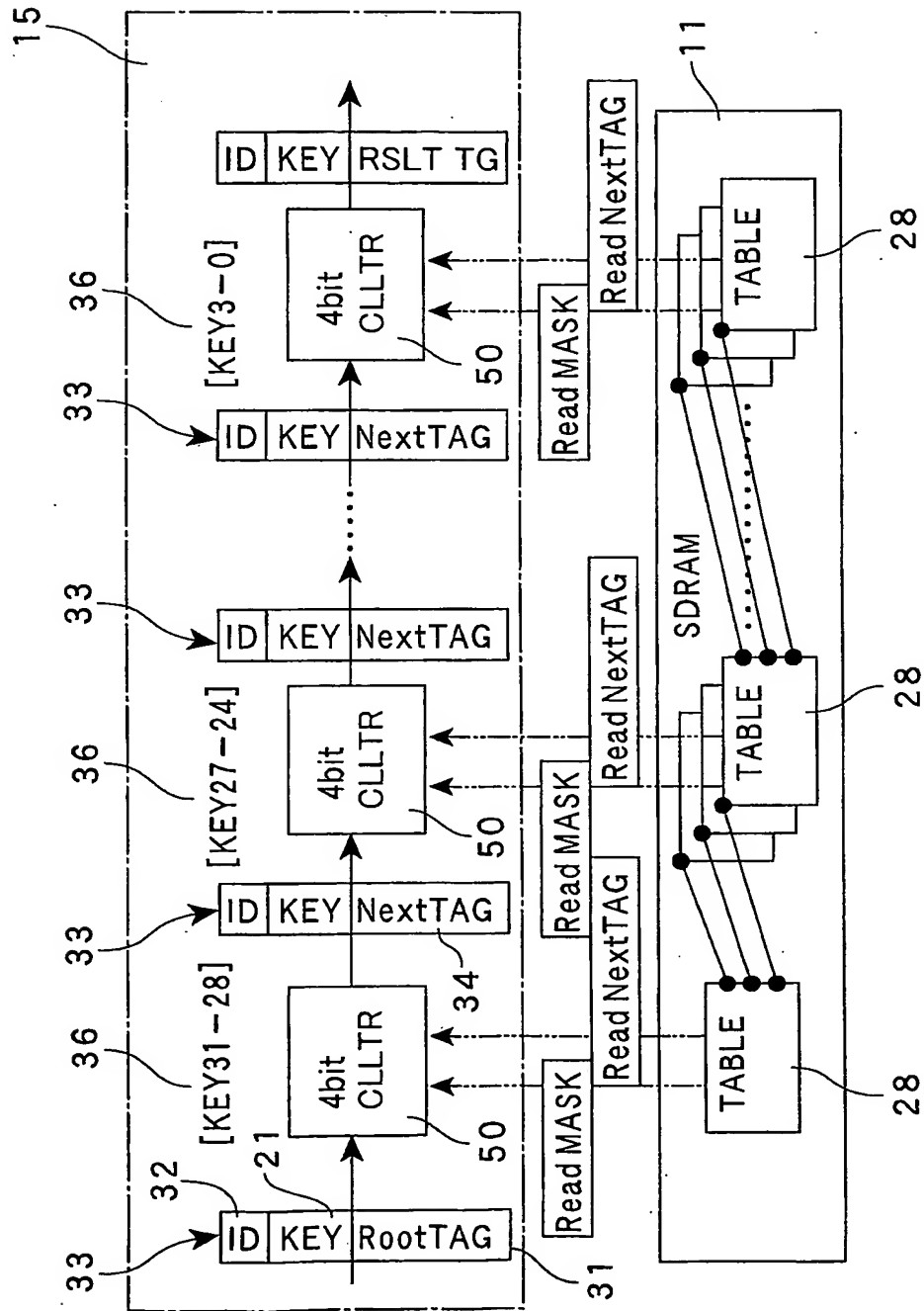


FIG. 16

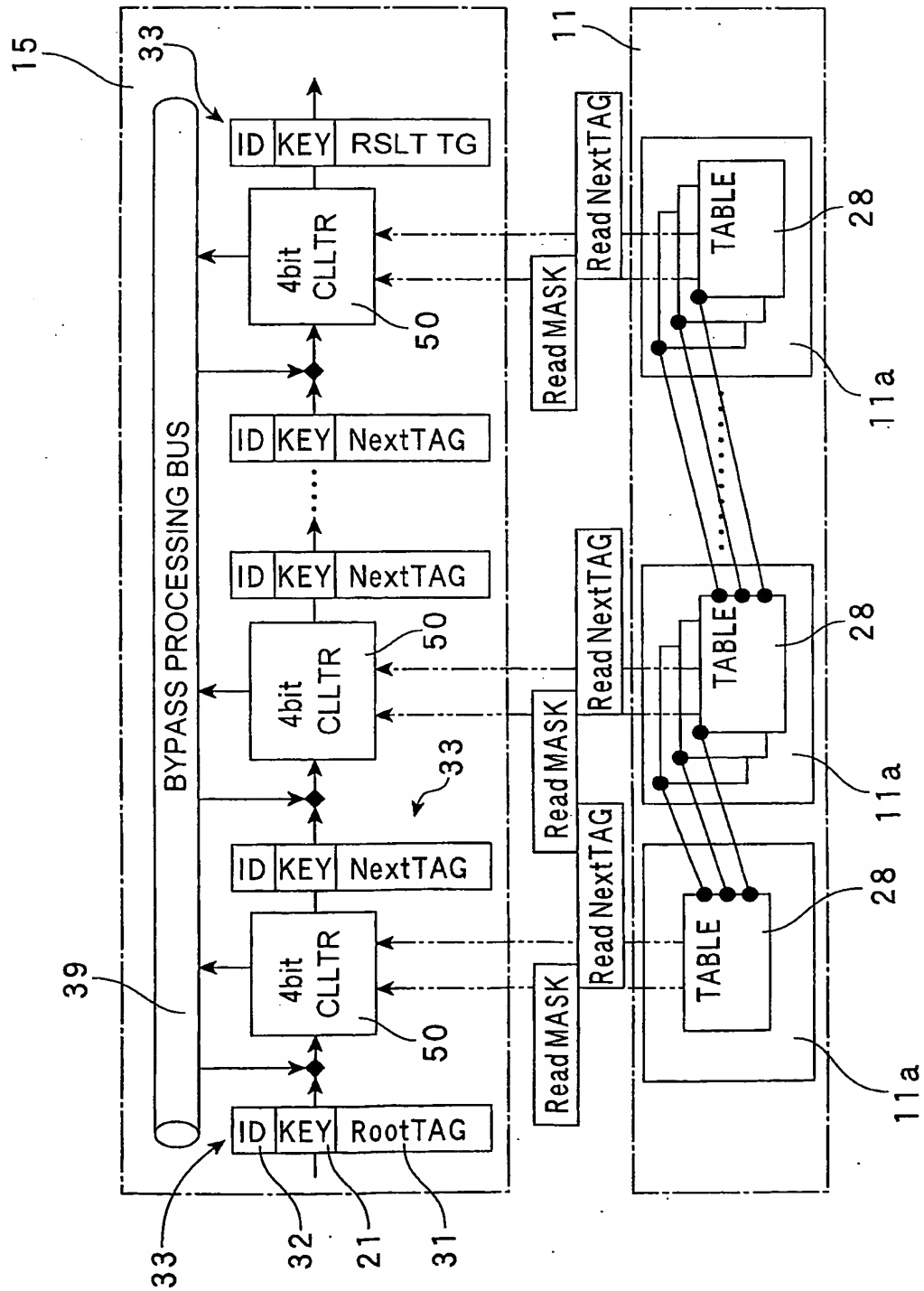


FIG.17

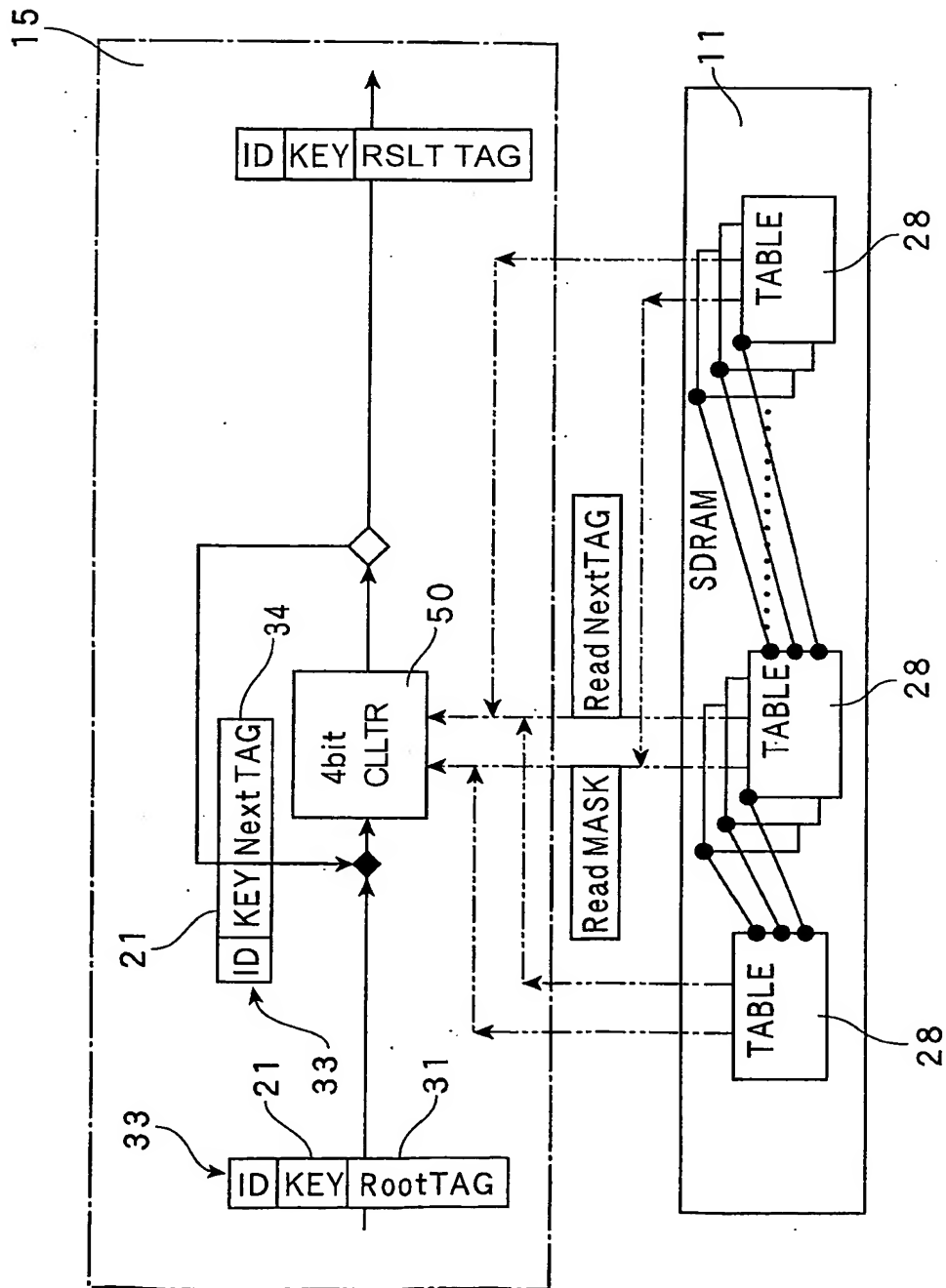
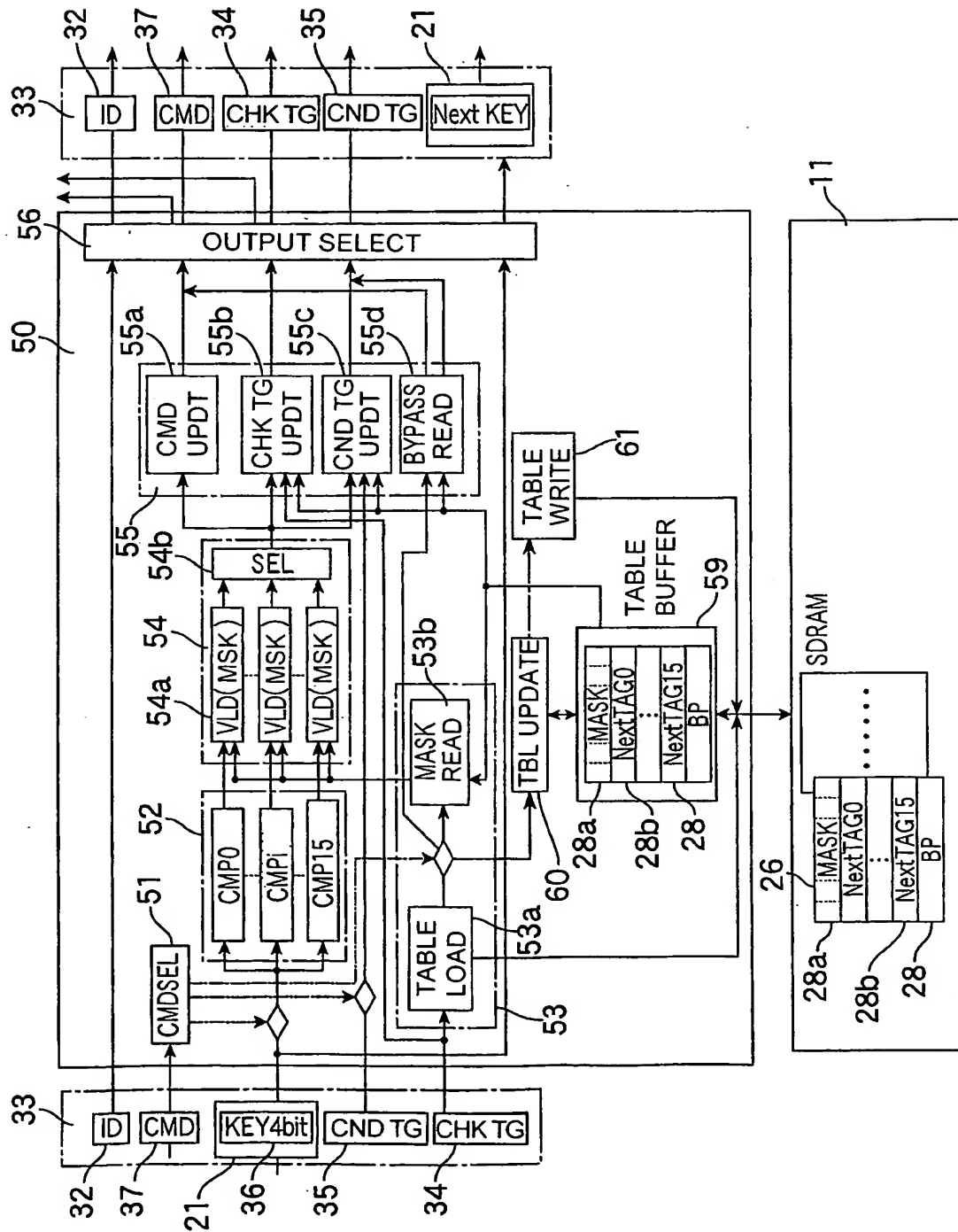
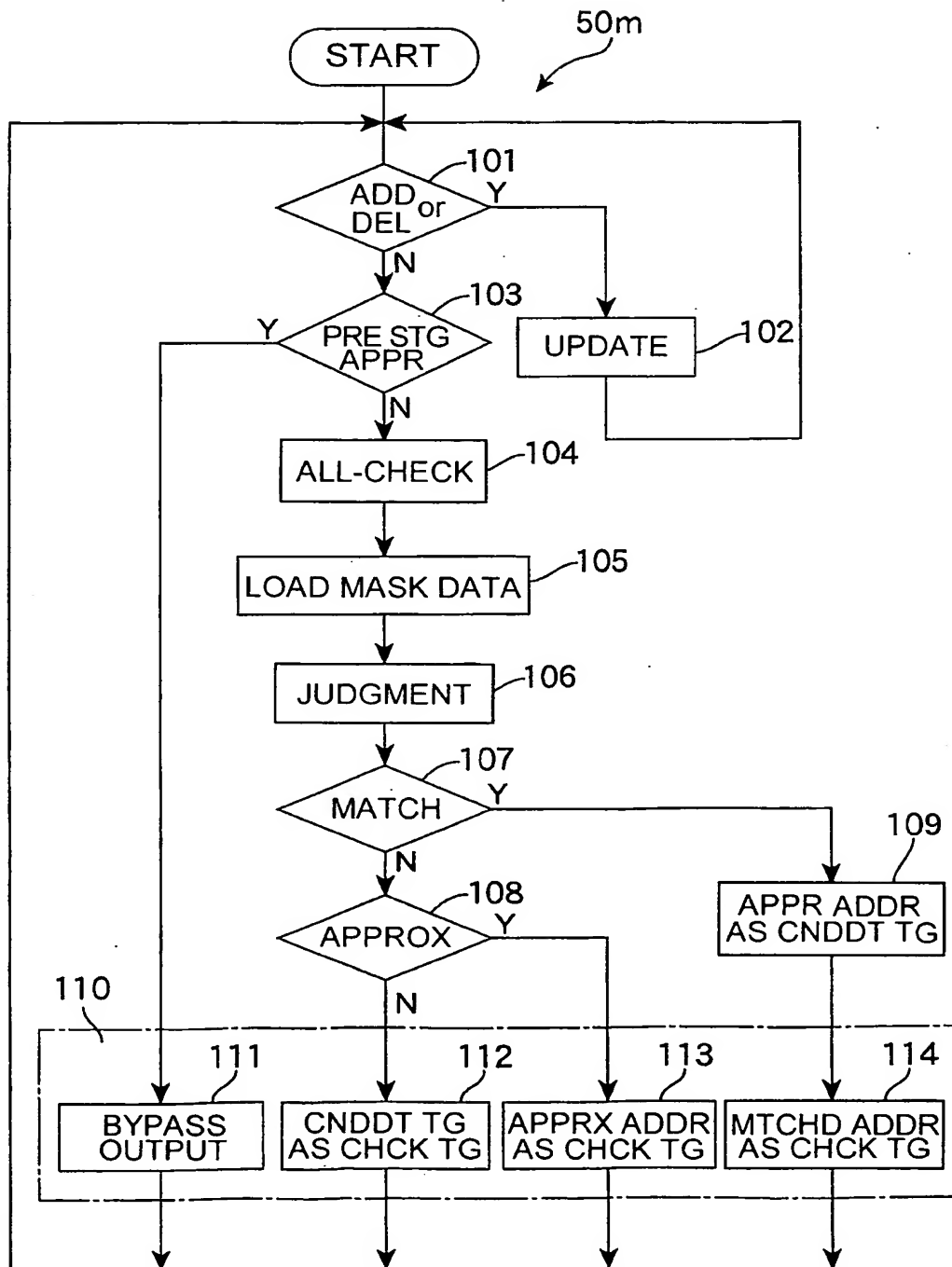


FIG. 18



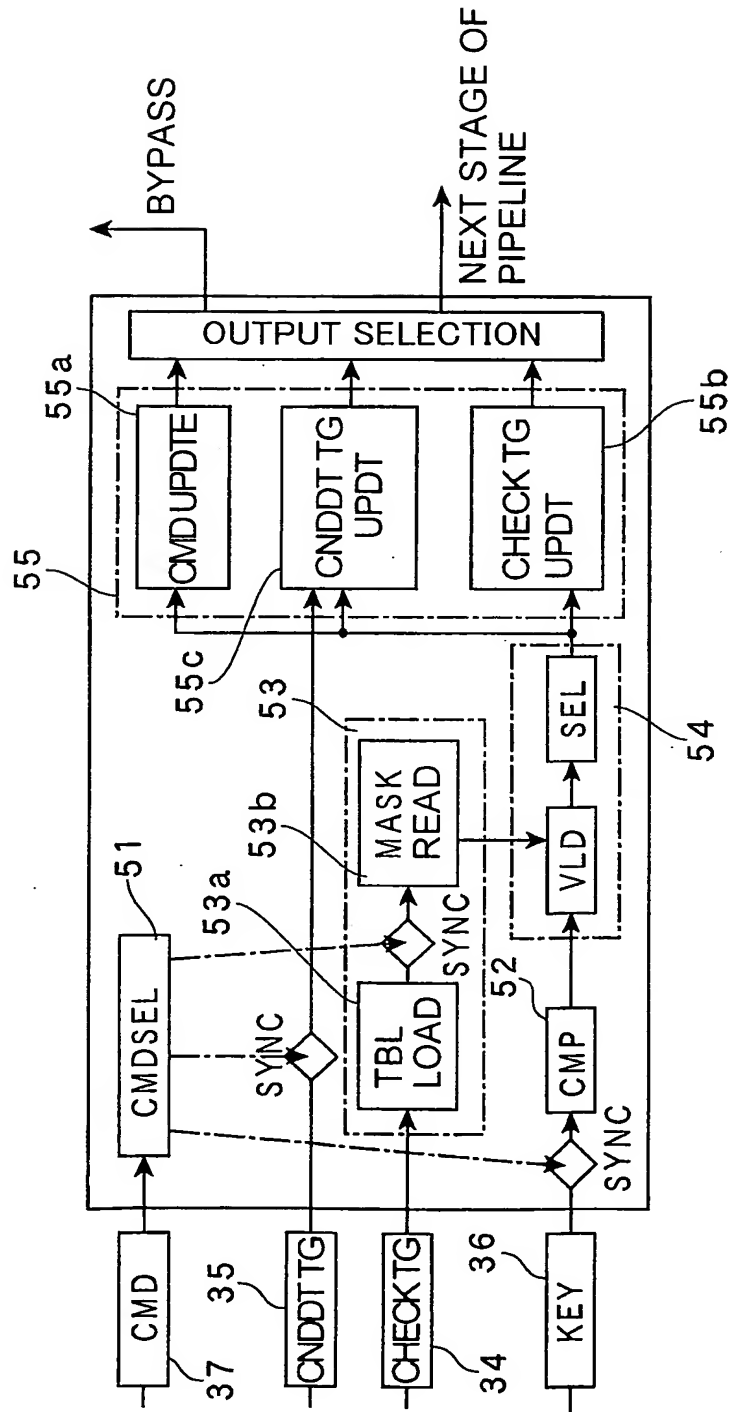
1 4 / 5 3

FIG.19



15 / 53

FIG. 20



1 6 / 5 3

FIG.21

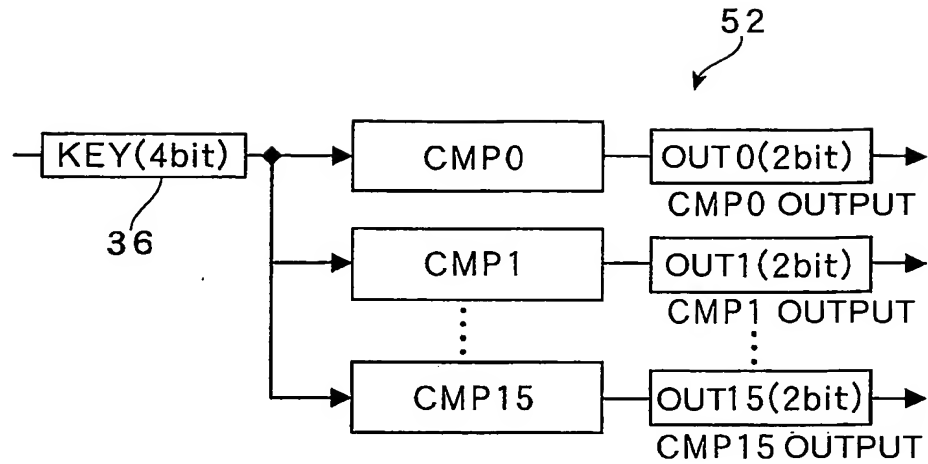
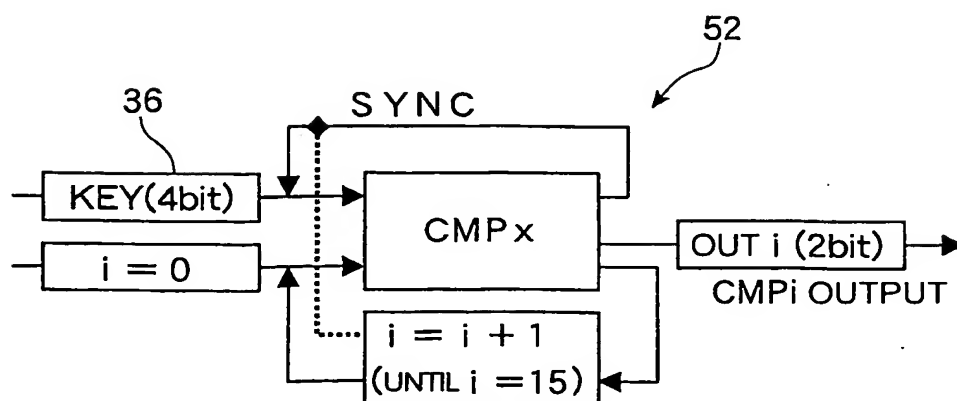


FIG.22

LOGIC OF COMPARATOR CMPi

CMP i	INPUT x	OUTPUT
	$x < i$	10 ($\Gamma < J$)
	$x = i$	01 ($\Gamma = J$)
	$x > i$	11 ($\Gamma > J$)
$i = 0 \sim 15$ (FIXED VALUE)		
$x = 0 \sim 15$ (4 bit INPUT VALUE)		

FIG.23



17 / 53

FIG.24

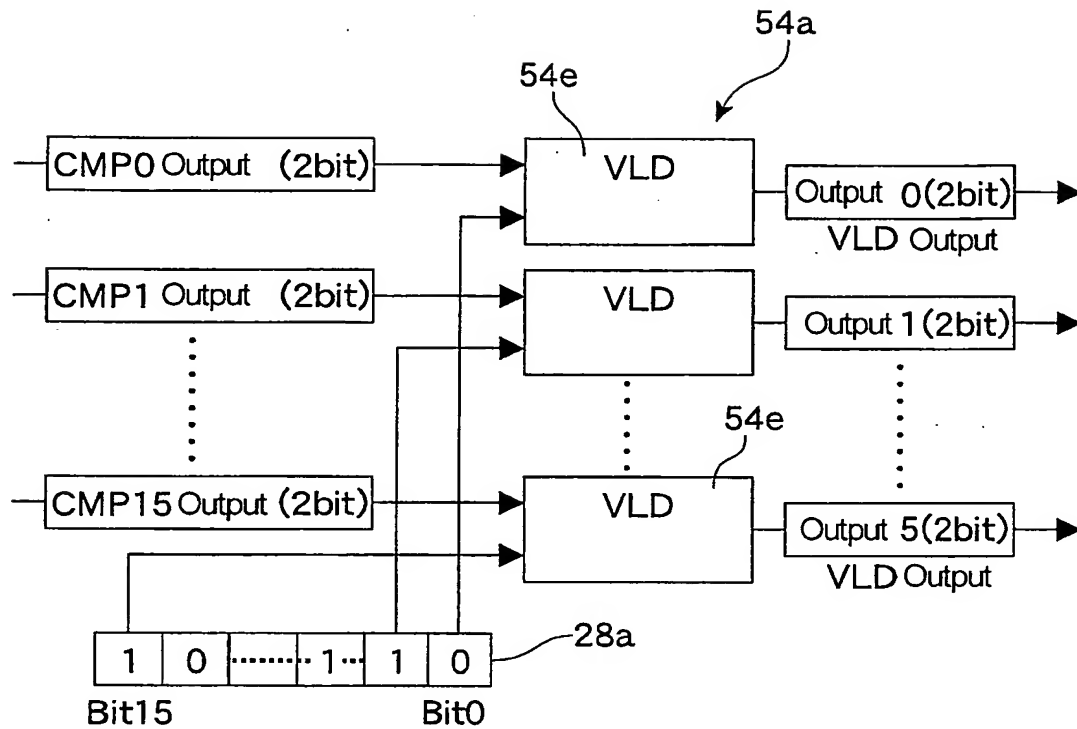


FIG.25

LOGIC OF MASK DEVICE VLD

CMPi Output	MASK VAL	VLD Output
10	0	00 (Γ X J)
01	0	00 (Γ X J)
11	0	00 (Γ X J)
10	1	10 (Γ < J)
01	1	01 (Γ = J)
11	1	11 (Γ > J)
AND OPERATION WITH MASK VAL		

18/53

FIG.26

SELECTION LOGIC OF COMPLETE MATCH SEARCH

V L D Output	Output G_f
00 ($\Gamma \times J$)	0
10 ($\Gamma < J$)	0
01 ($\Gamma = J$)	1
11 ($\Gamma > J$)	0

FIG.27SELECTION LOGIC OF SCOPE SEARCH
(RIGHT-INCLINED MATCH TYPE)

(a)

V L D Output	Intermediate F_r	Output G_r
00 ($\Gamma \times J$)	0	0
10 ($\Gamma < J$)	0	0
01 ($\Gamma = J$)	0	0
11 ($\Gamma > J$)	1	$G_r(i)$

(b)

$H_r(i-1)$	$F_r(i)$	$H_r(i)$
0	0	0
0	1	1
1	0	1
1	1	1

(c)

$H_r(i-1)$	$H_r(i)$	$G_r(i)$
0	0	0
0	1	1
1	0	0
1	1	0

19/53

FIG.28

SELECTION LOGIC OF SCOPE SEARCH
(LEFT-INCLINED MATCH TYPE)

(a)

V L D Output	Intermediate F_I	Output G_I
00 ($\Gamma \times J$)	0	0
10 ($\Gamma < J$)	1	$G_I(i)$
01 ($\Gamma = J$)	0	0
11 ($\Gamma > J$)	0	0

(b)

$H_I(i+1)$	$F_I(i)$	$H_I(i)$
0	0	0
0	1	1
1	0	1
1	1	1

(c)

$H_I(i+1)$	$H_I(i)$	$G_I(i)$
0	0	0
0	1	1
1	0	0
1	1	0

20 / 53

FIG.29

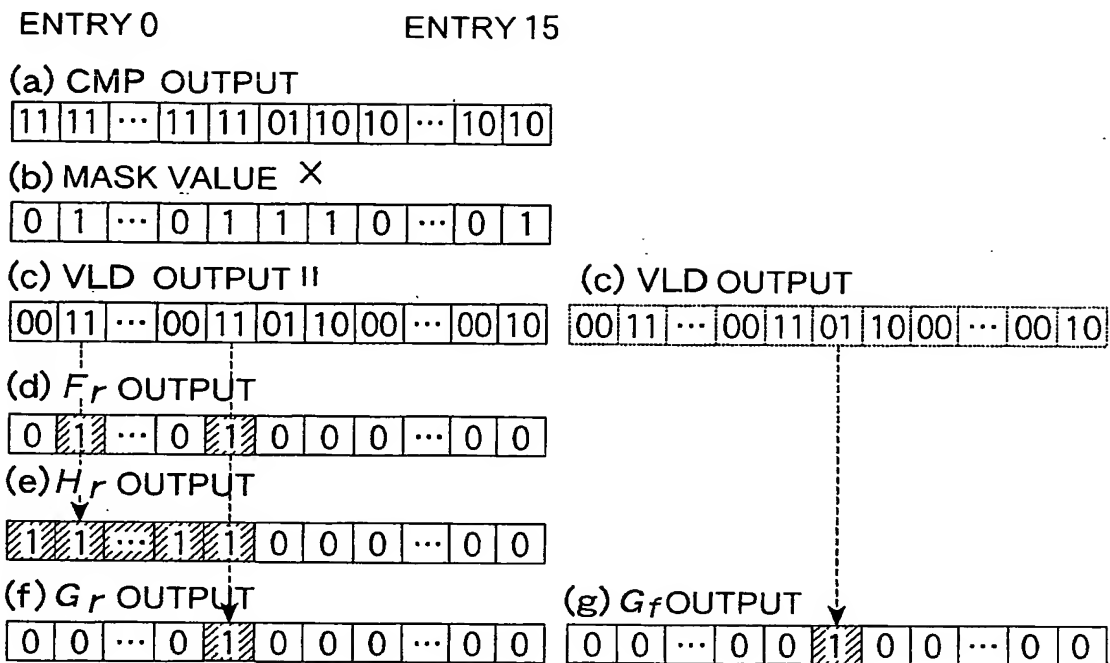
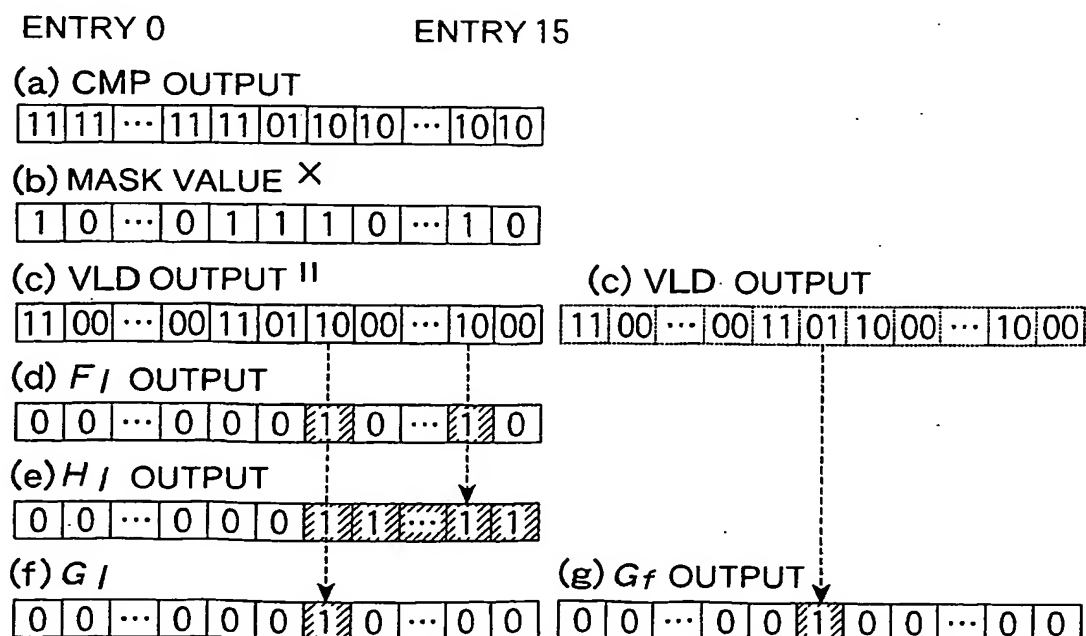


FIG.30



21 / 53

FIG.31

37

TYPE	COMMAND	DESCRIPTION
COMPLETE MATCH SEARCH	FMATCHEXEC	CHECK CONT
	FMATCHHIT	HIT
	FMATCHFAIL	MISHIT
SCOPE SEARCH	MATCHEXEC	CHECK CONT
	MATCHRDBP	BYPASS READ
	MATCHFHIT	CMPLT MATCH HIT
	MATCHNHIT	APPROX HIT
	MATCHFAIL	MISHIT
REGISTRATION	ADD	HI → LO
	ADDNEW	NEW TABLE
	ADDFIN	REG CMPLT
	ADDFAIL	REG FAILURE
	ADDUPDT	BP UPDT FEED
	(ADDWCLR)	(WAIT CLEAR)
DELETION	DEL	LO CONTINUATIN
	DELFIN	DEL CMPLT
	DELFAIL	DEL FAILURE
	DELUPDT	BP UPDT FEED
	DELRDBP	LO BP REF
	DELWRBP	SELF BP UPDATE

22 / 53

FIG.32

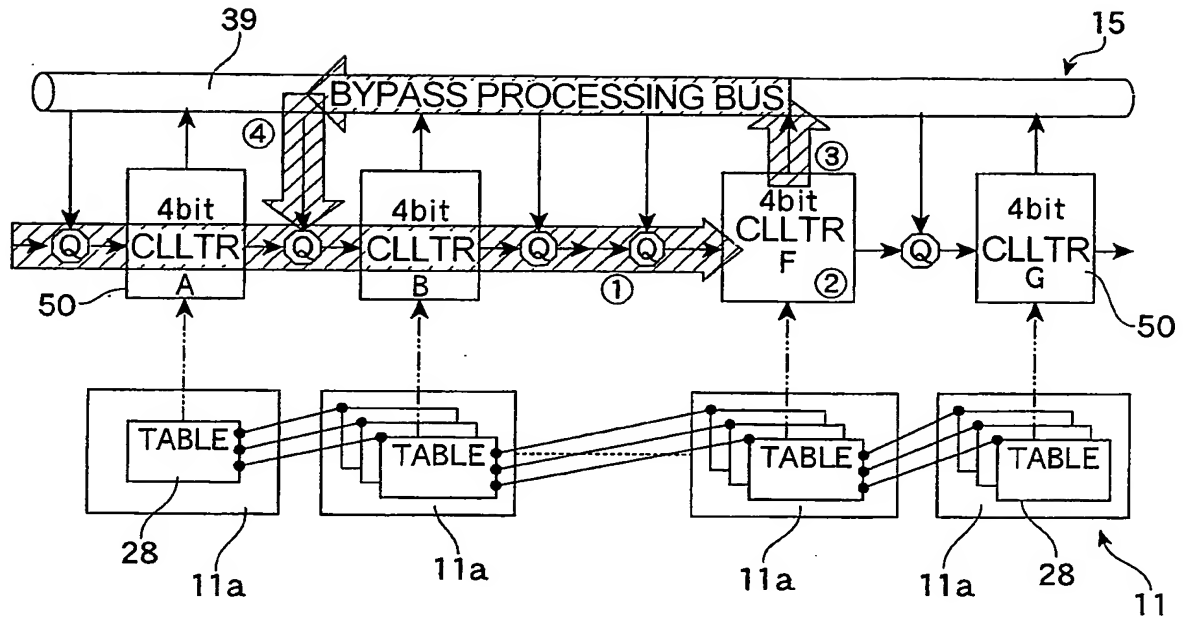
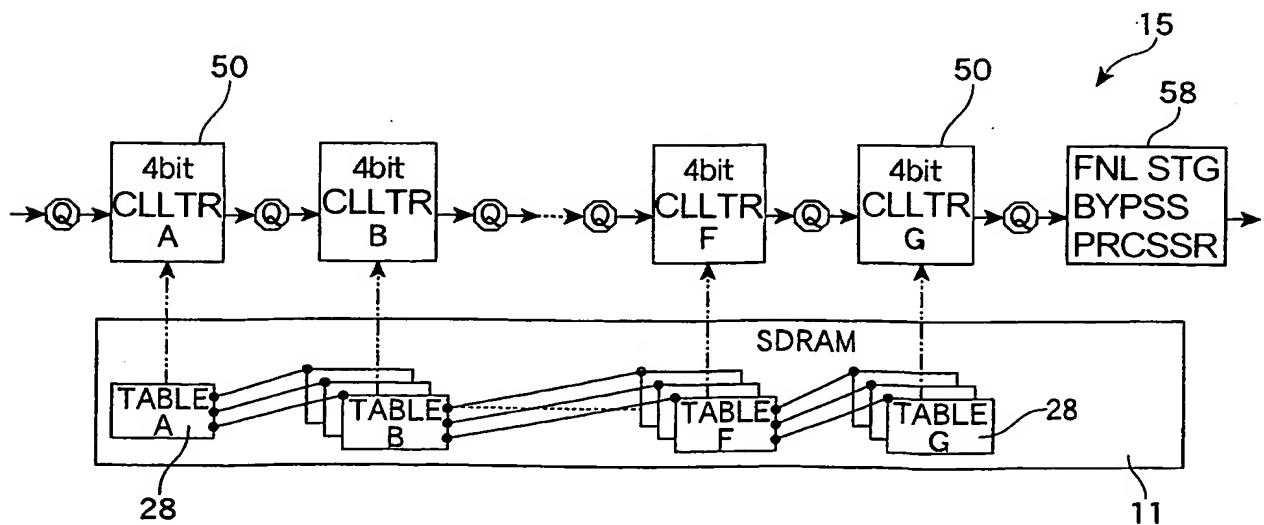


FIG.33



23 / 53

FIG. 34

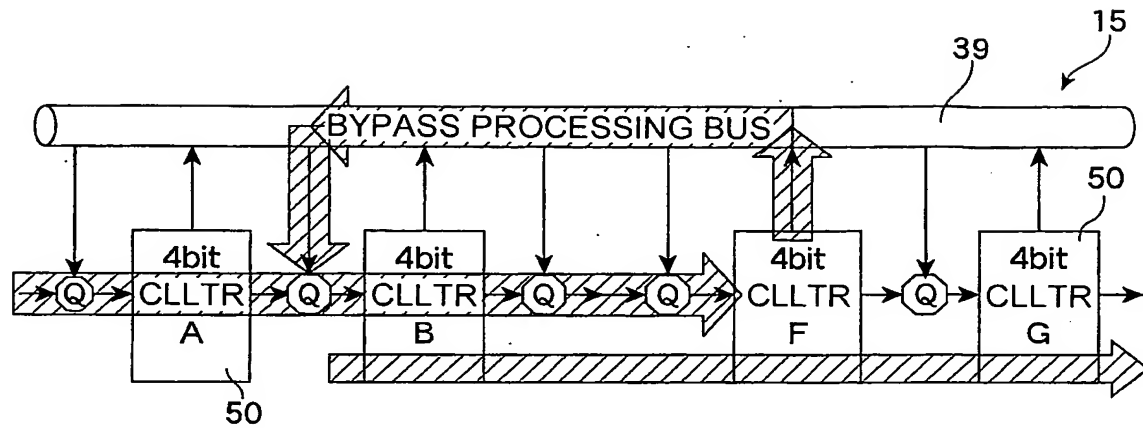
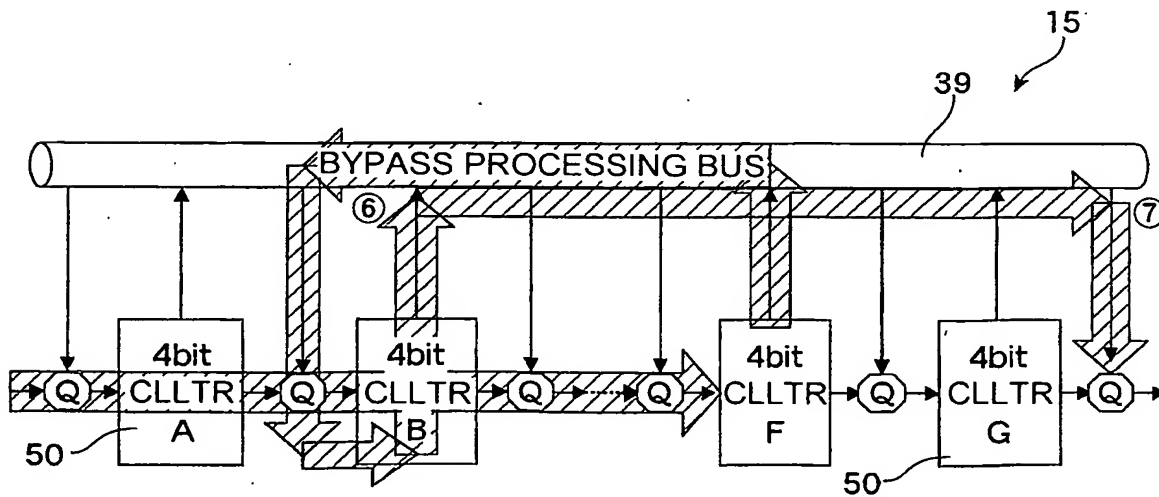


FIG. 35



24 / 53

FIG.36

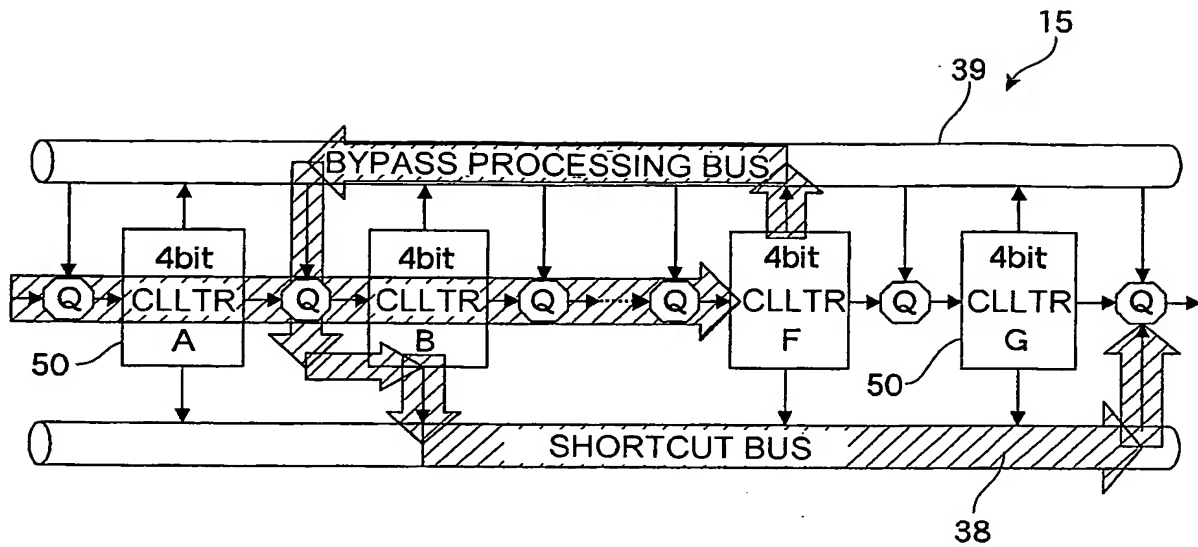
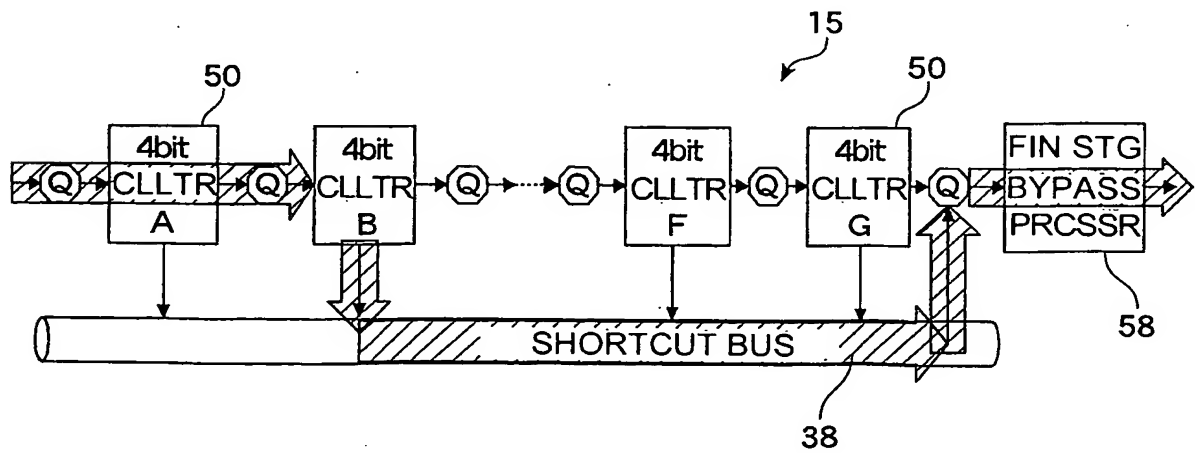


FIG.37



25 / 53

FIG.38

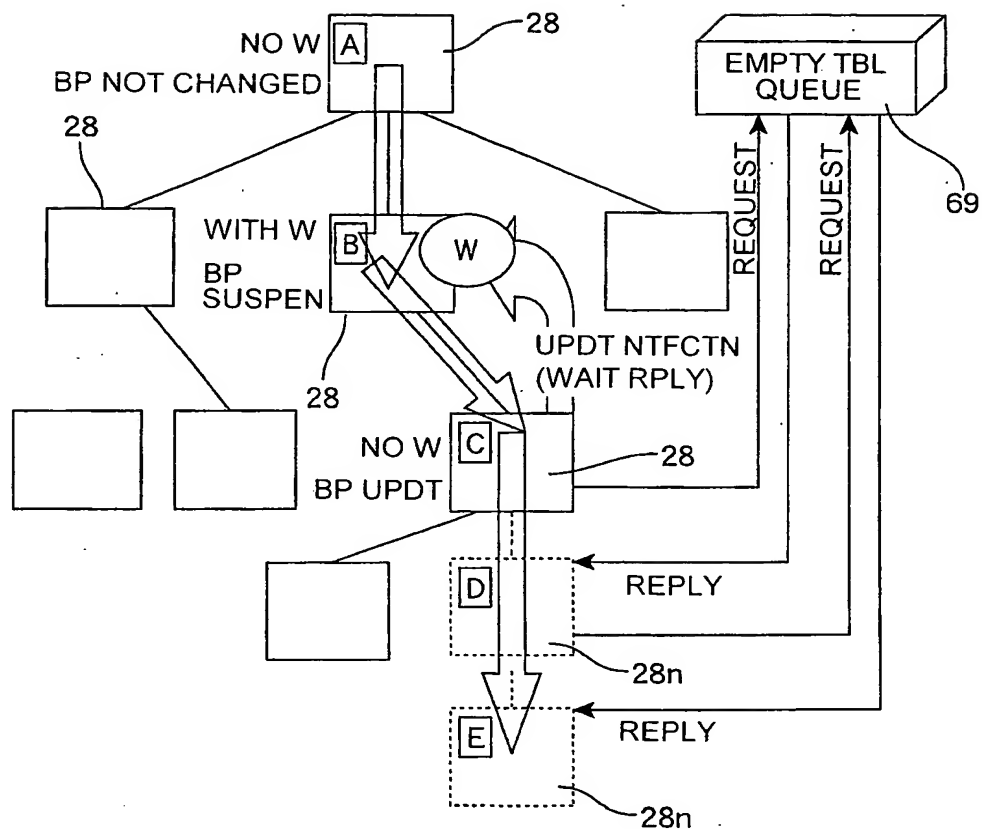


FIG.39

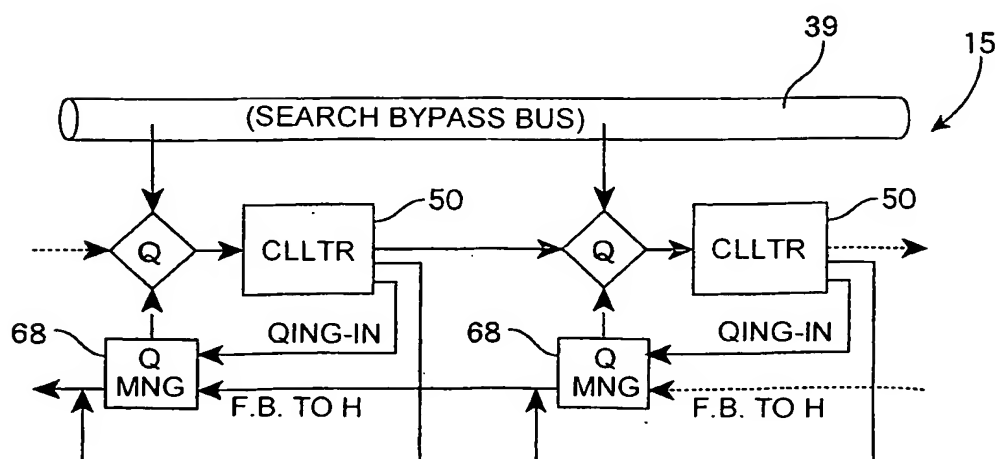
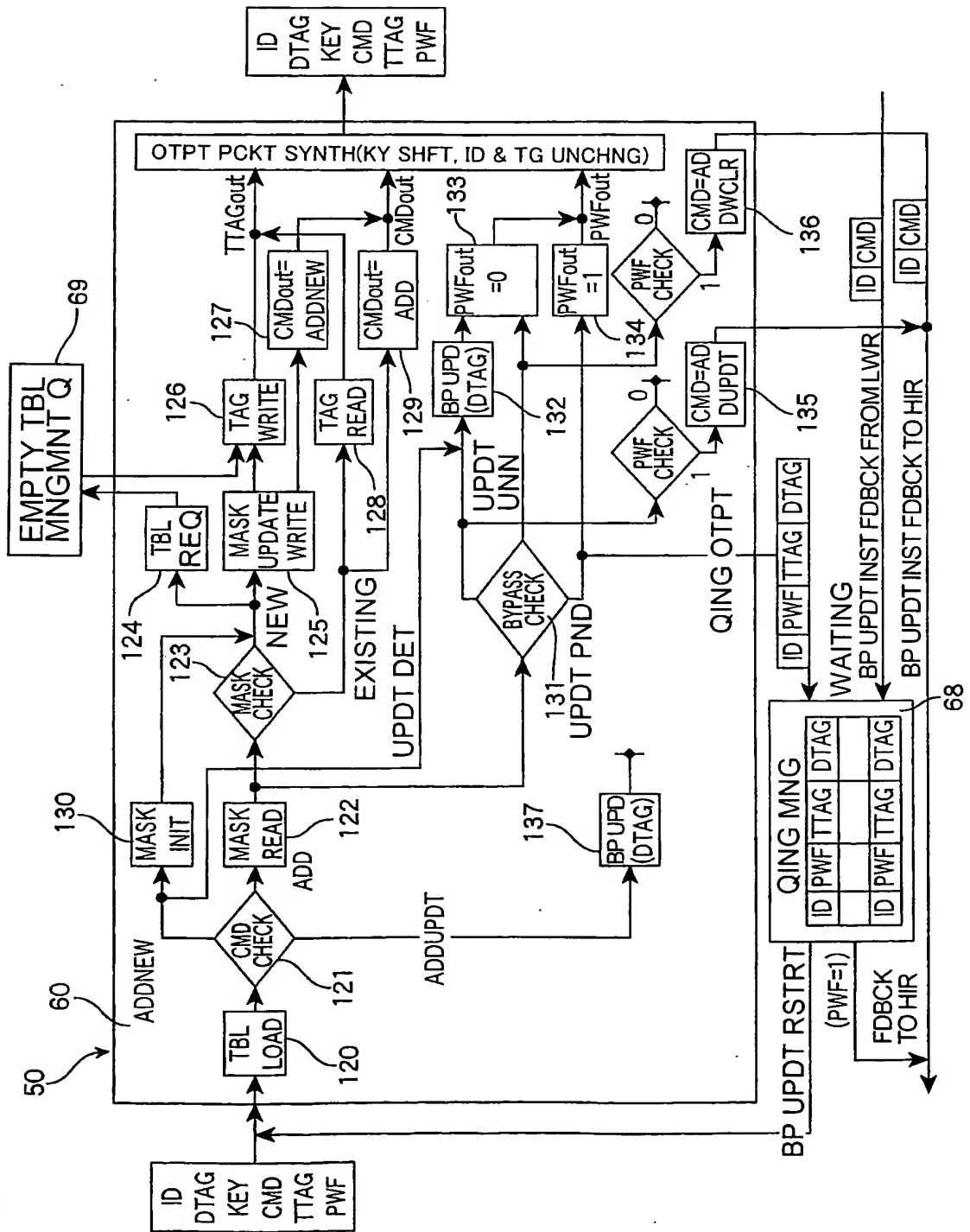
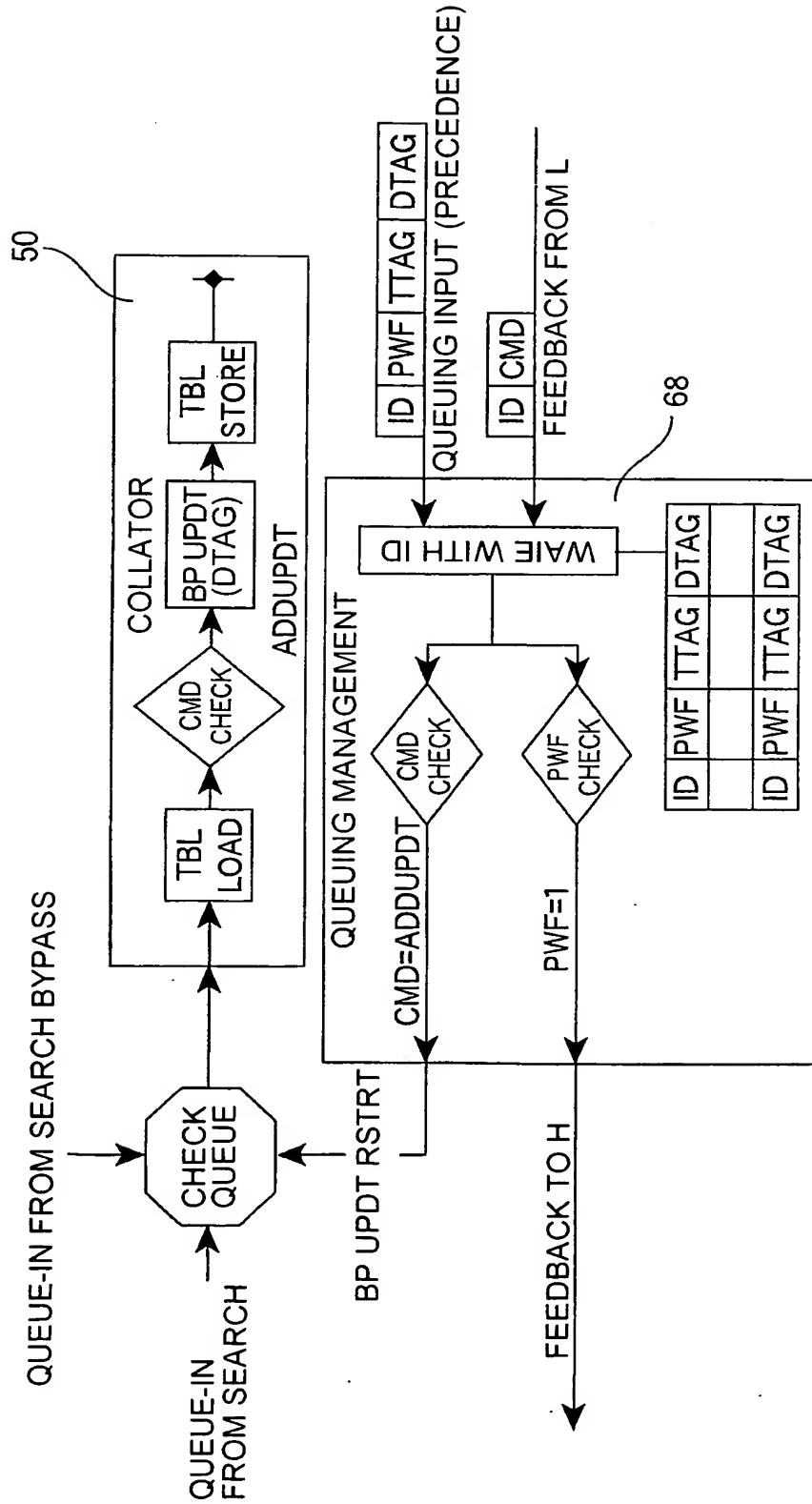


FIG. 40



27/53

FIG. 41



28 / 53

FIG.42

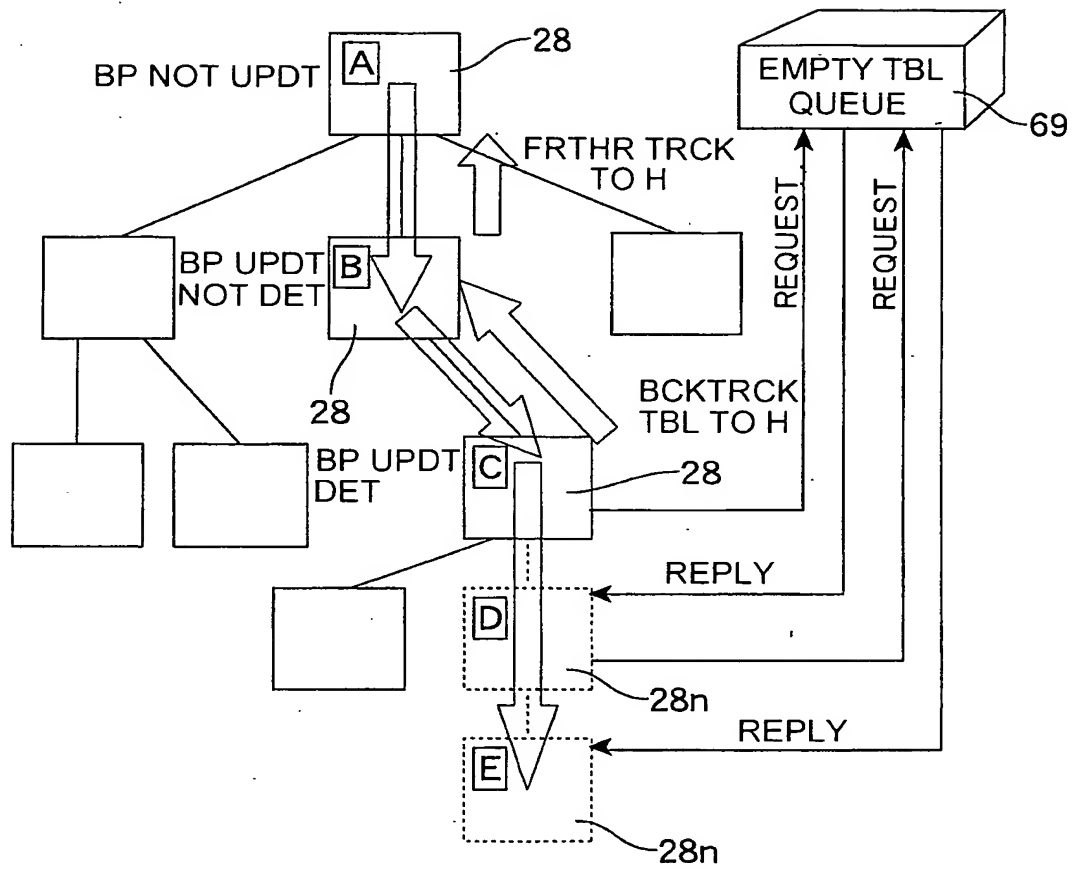
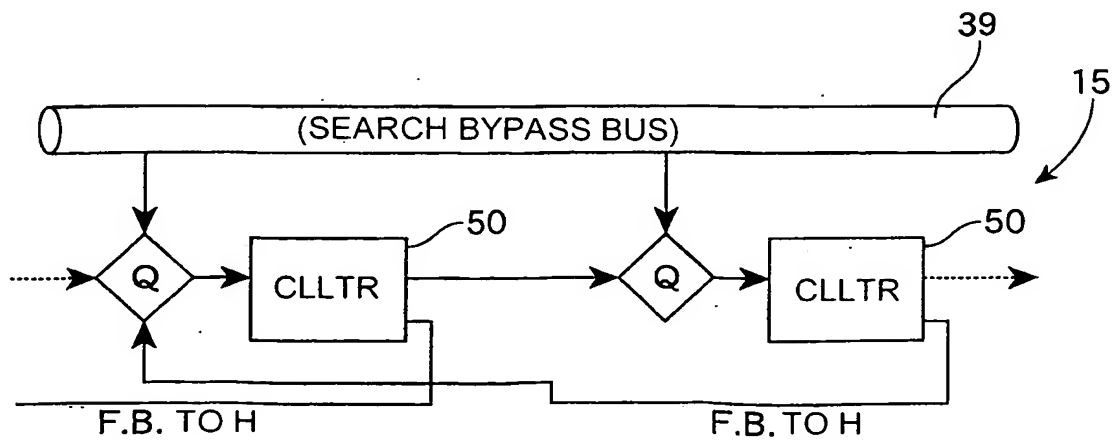


FIG.43



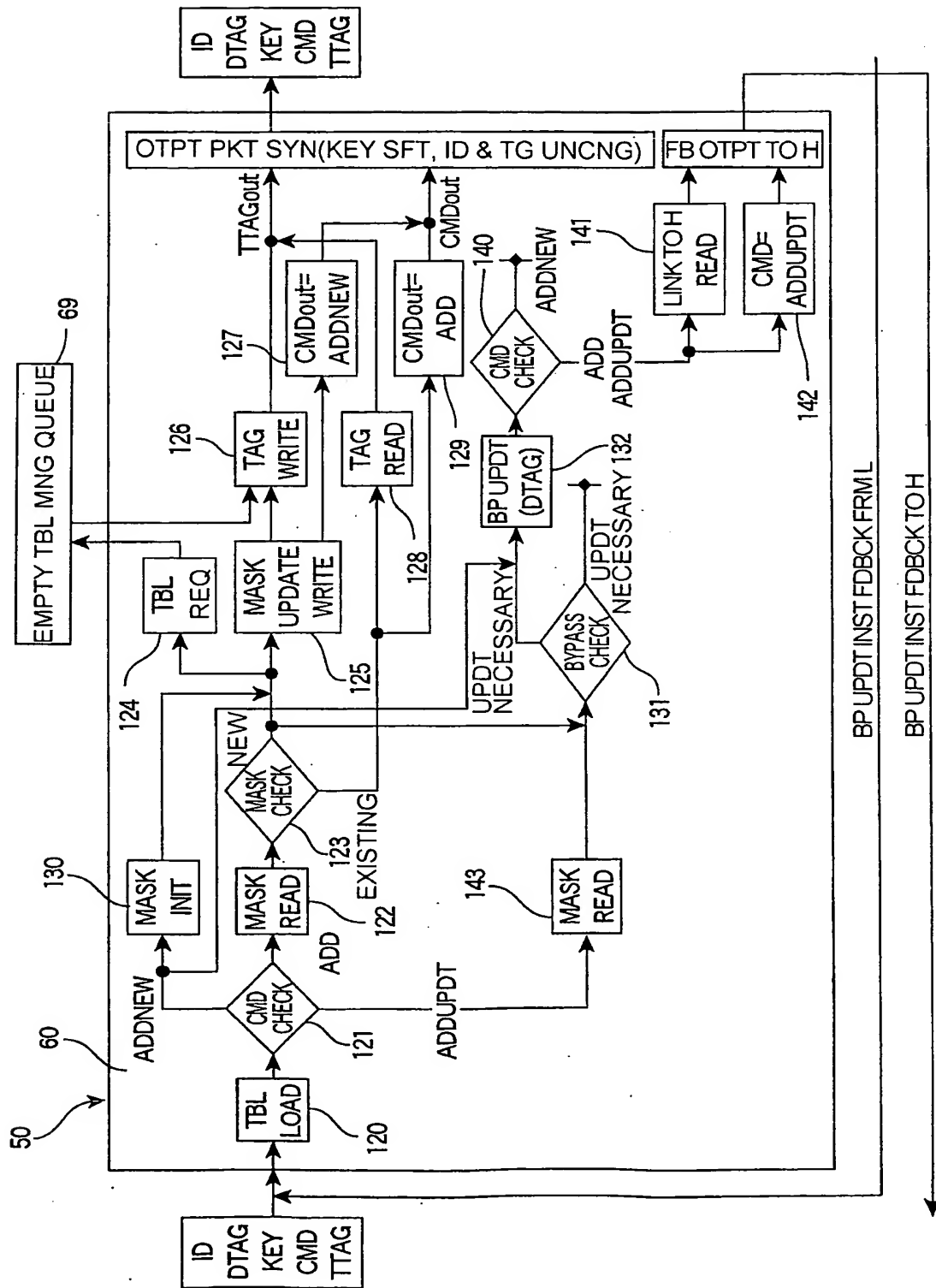


FIG. 44

FIG. 46

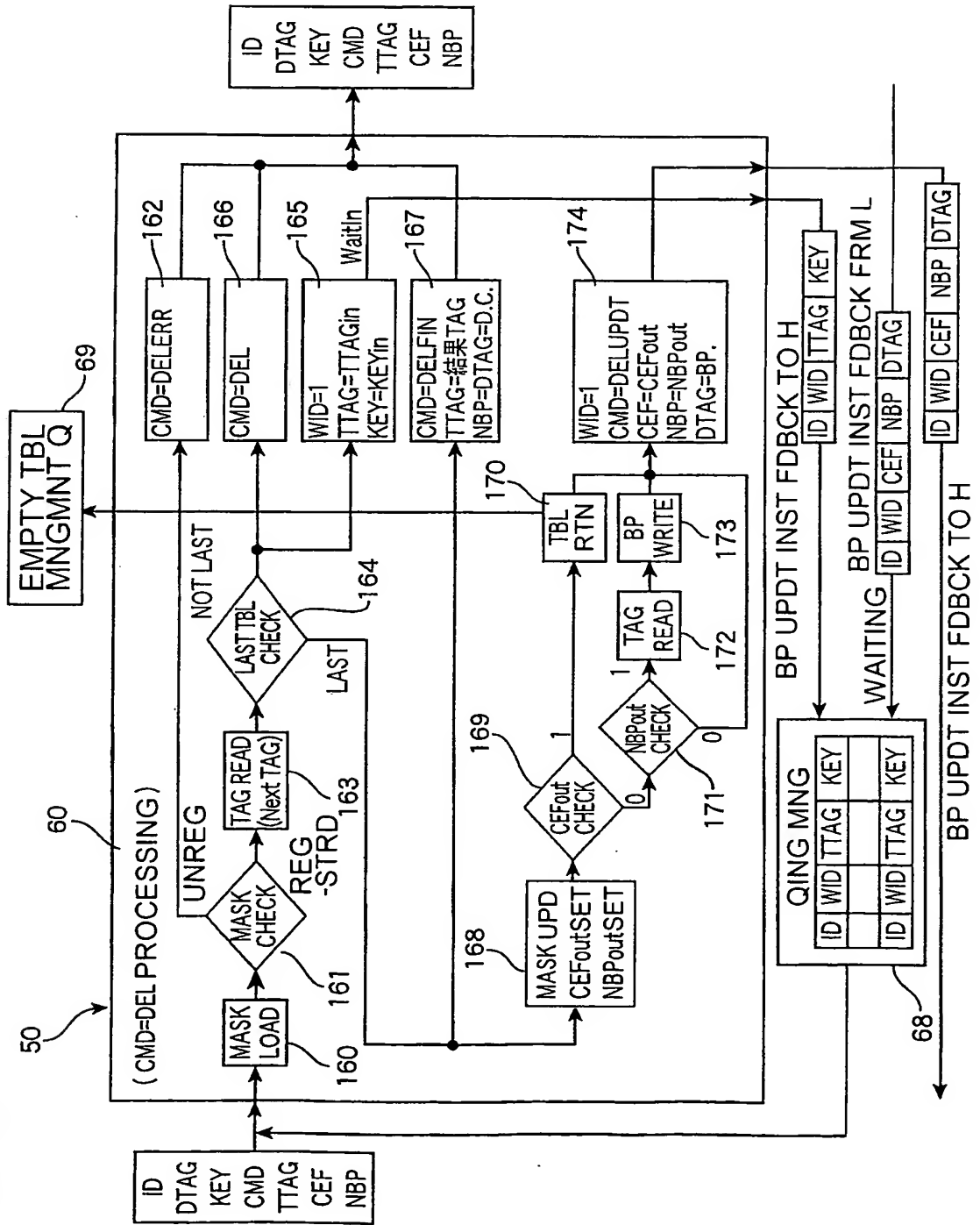
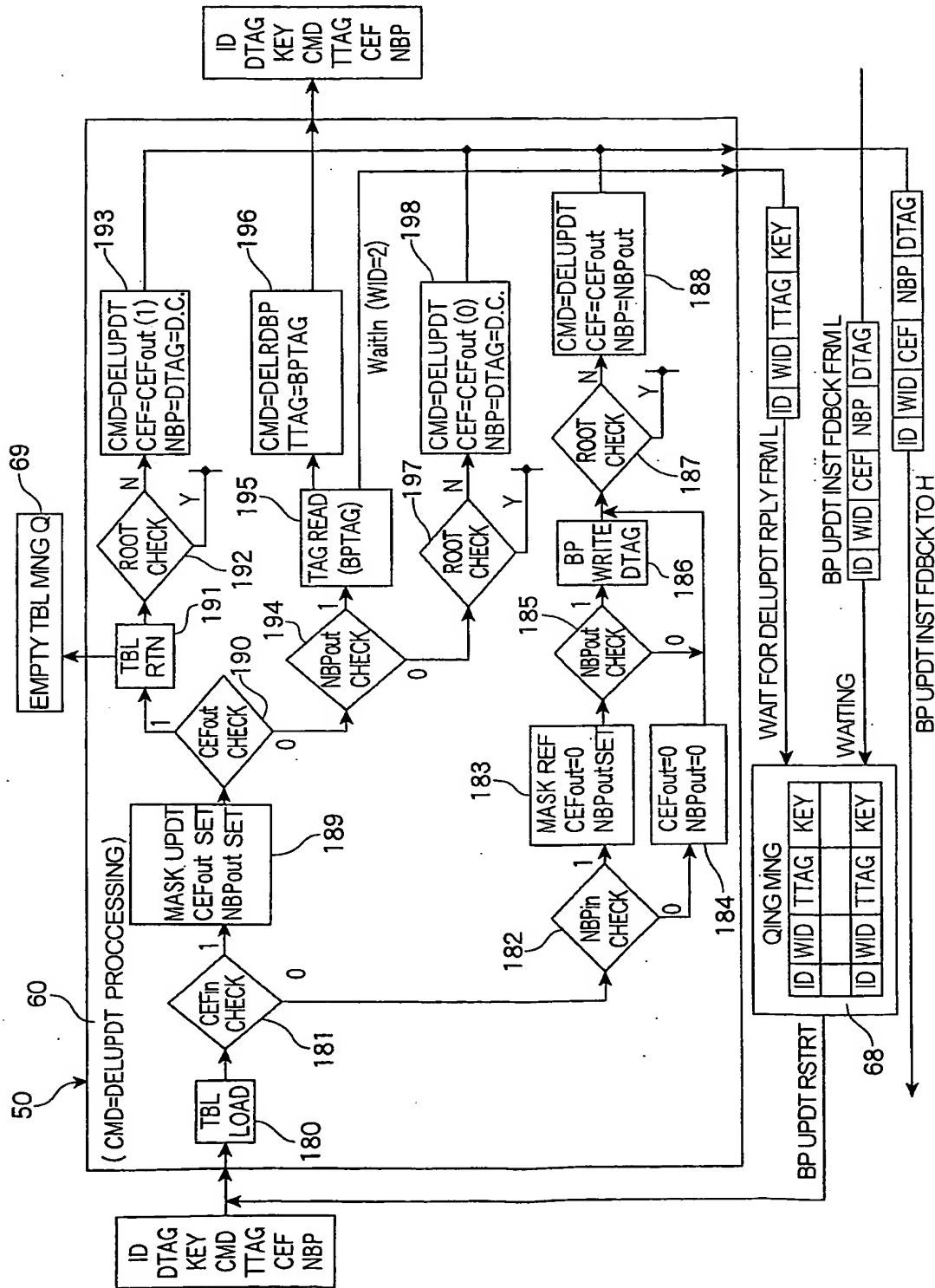
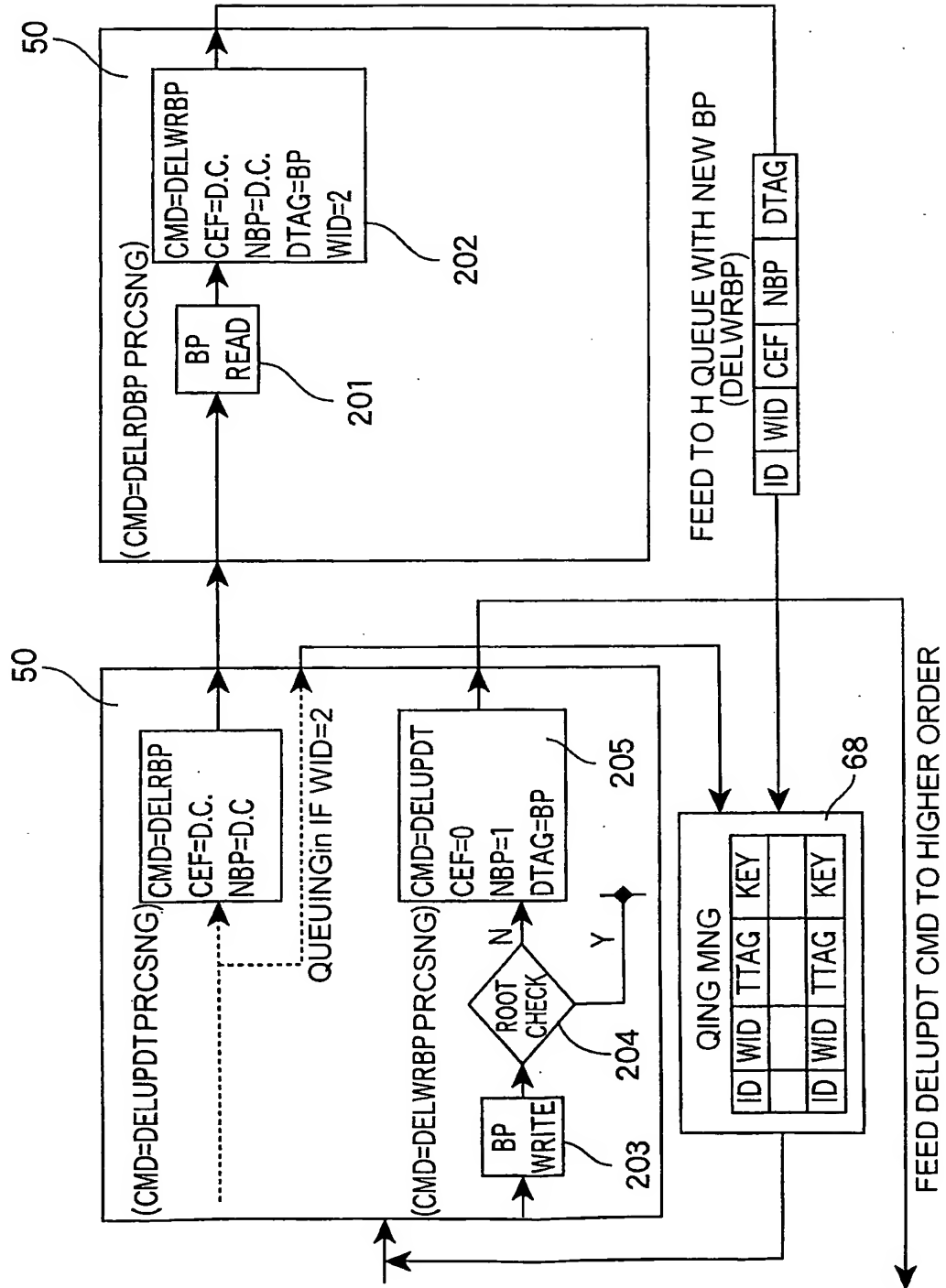


FIG. 47



3 3 / 5 3

FIG.48



3 4 / 5 3

FIG. 49

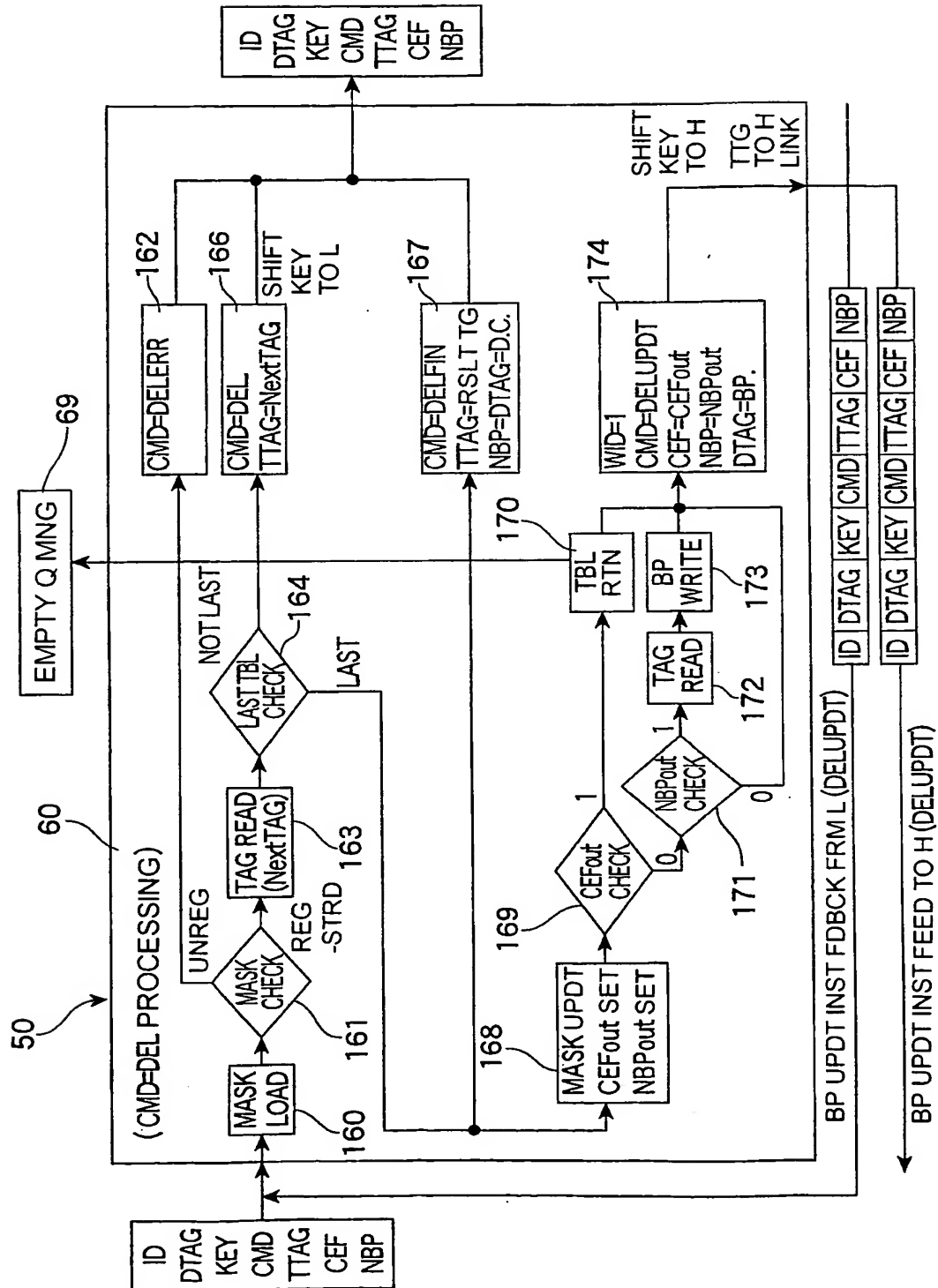


FIG. 50

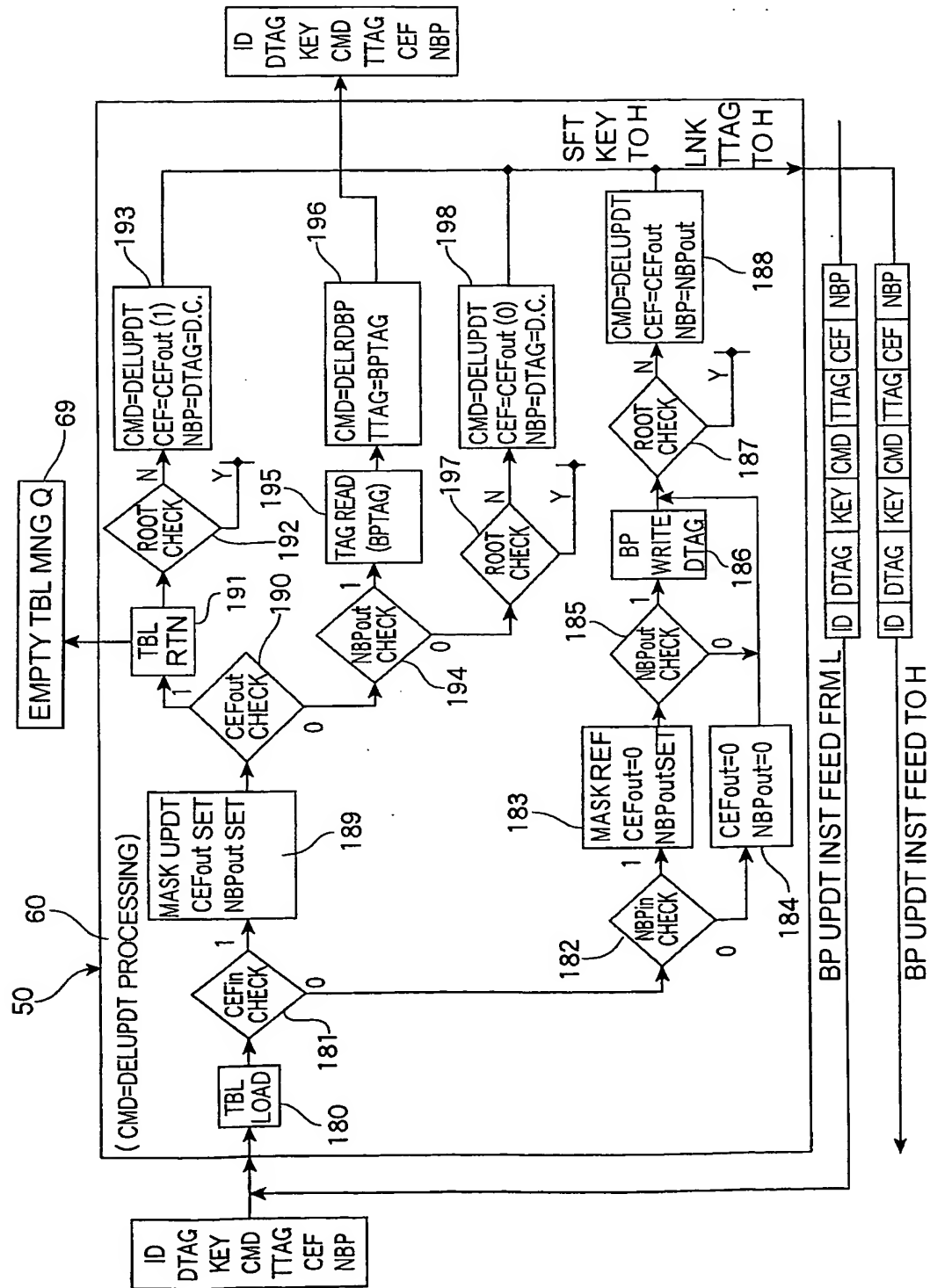
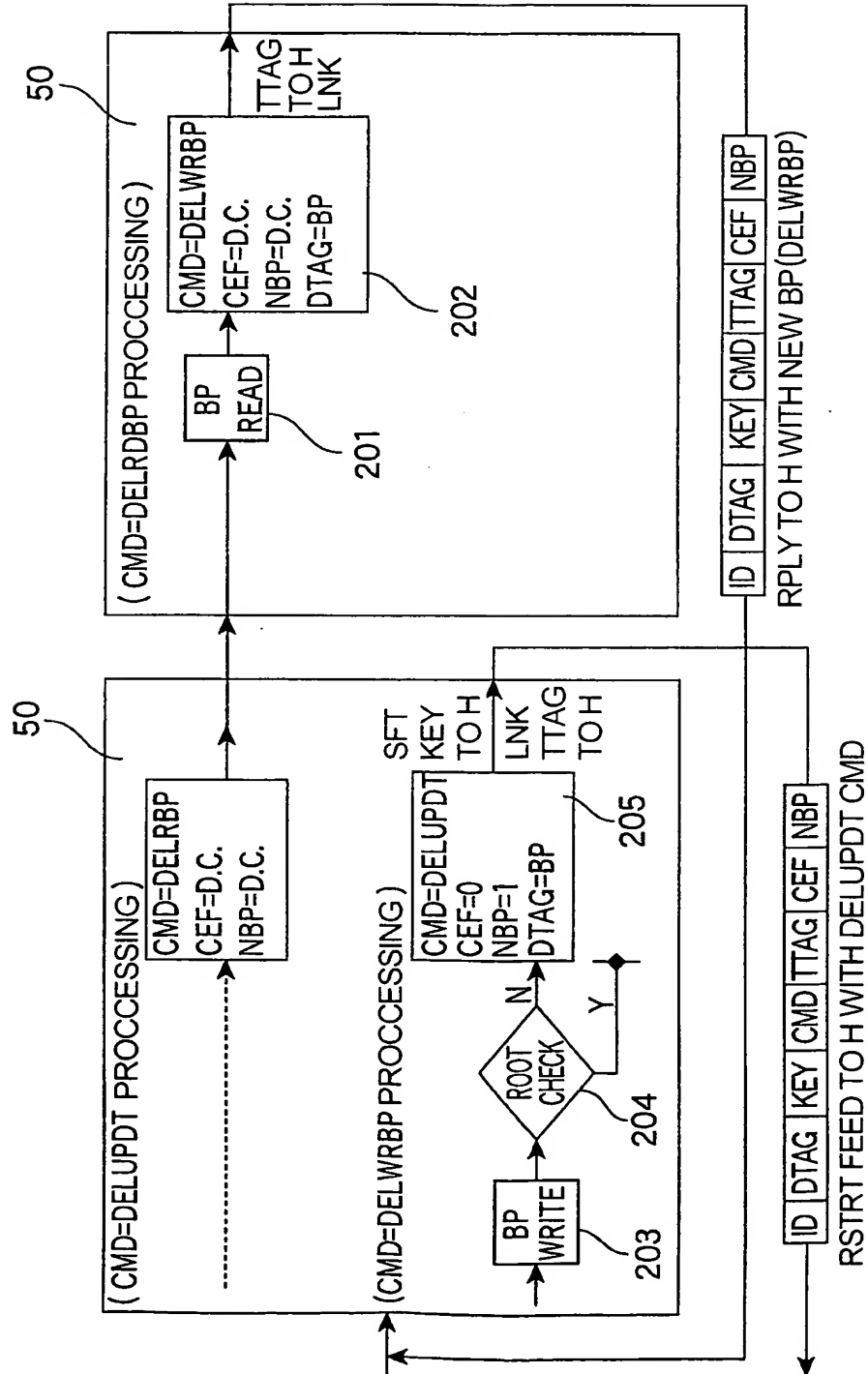


FIG.51



37 / 53

FIG. 52

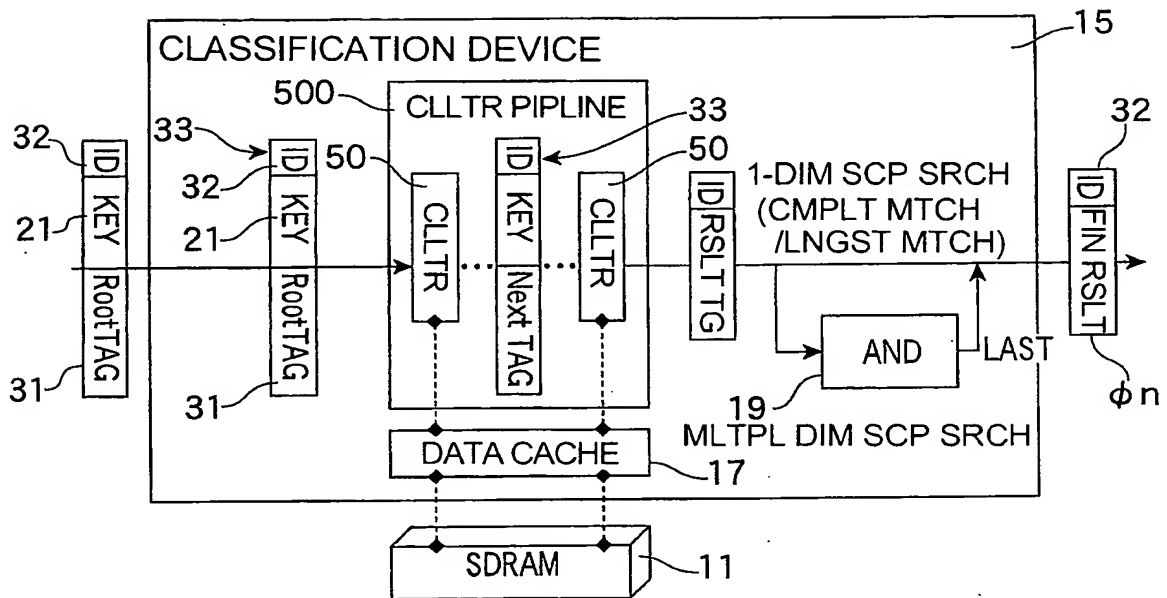
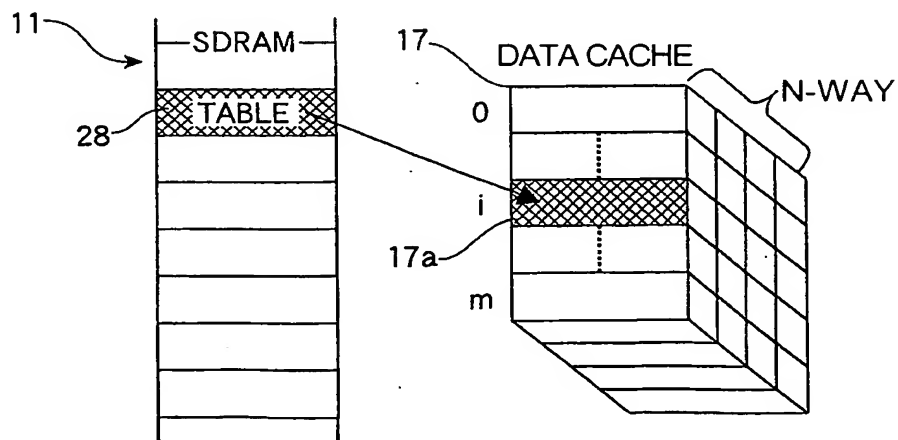
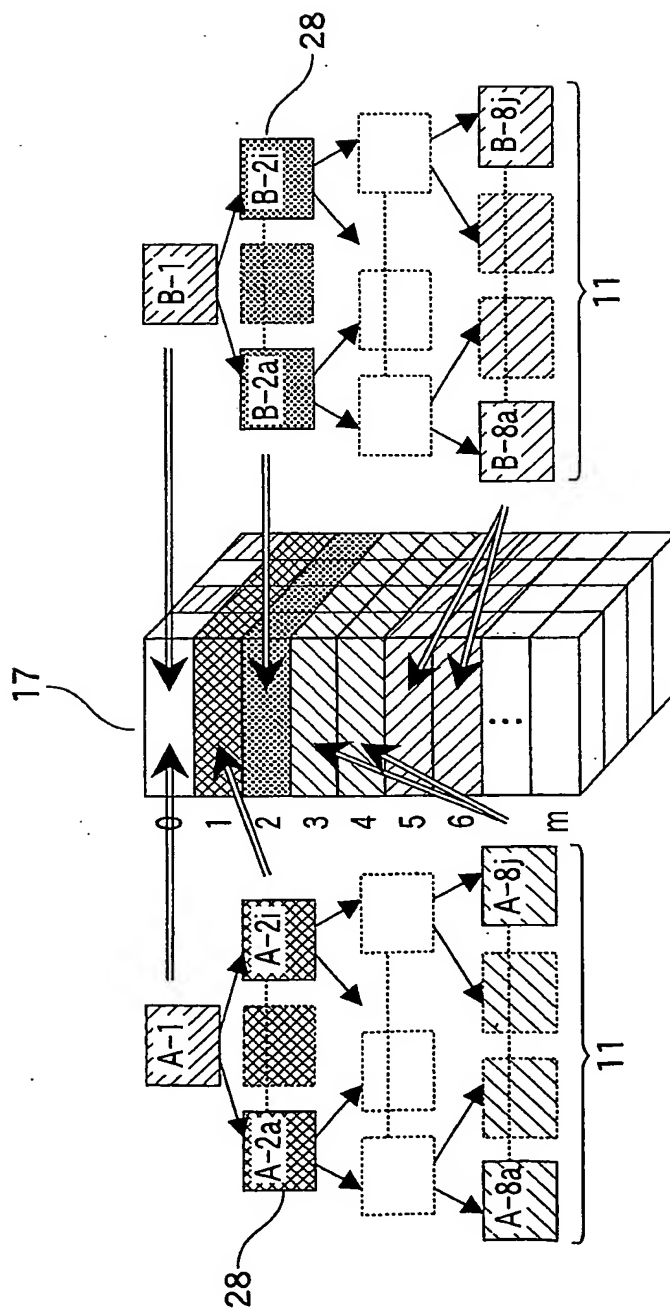


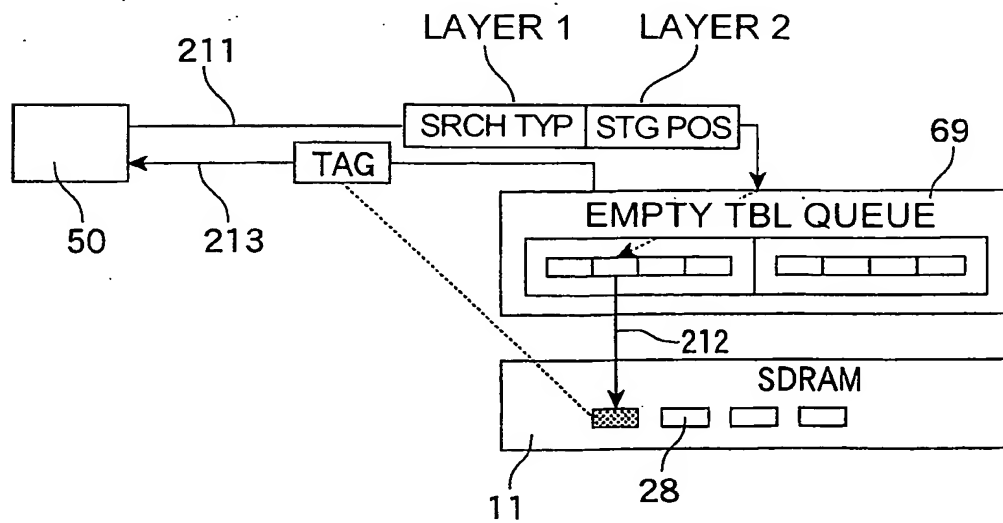
FIG. 53



38 / 53

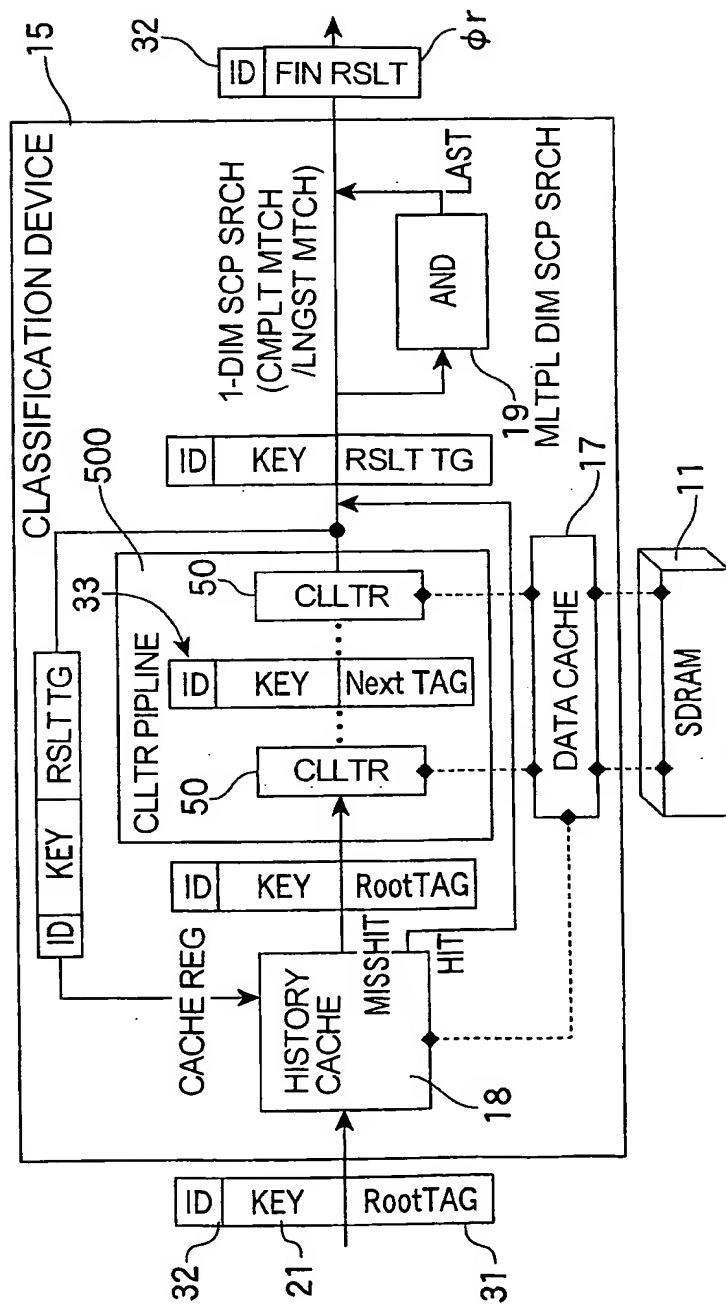
FIG. 54





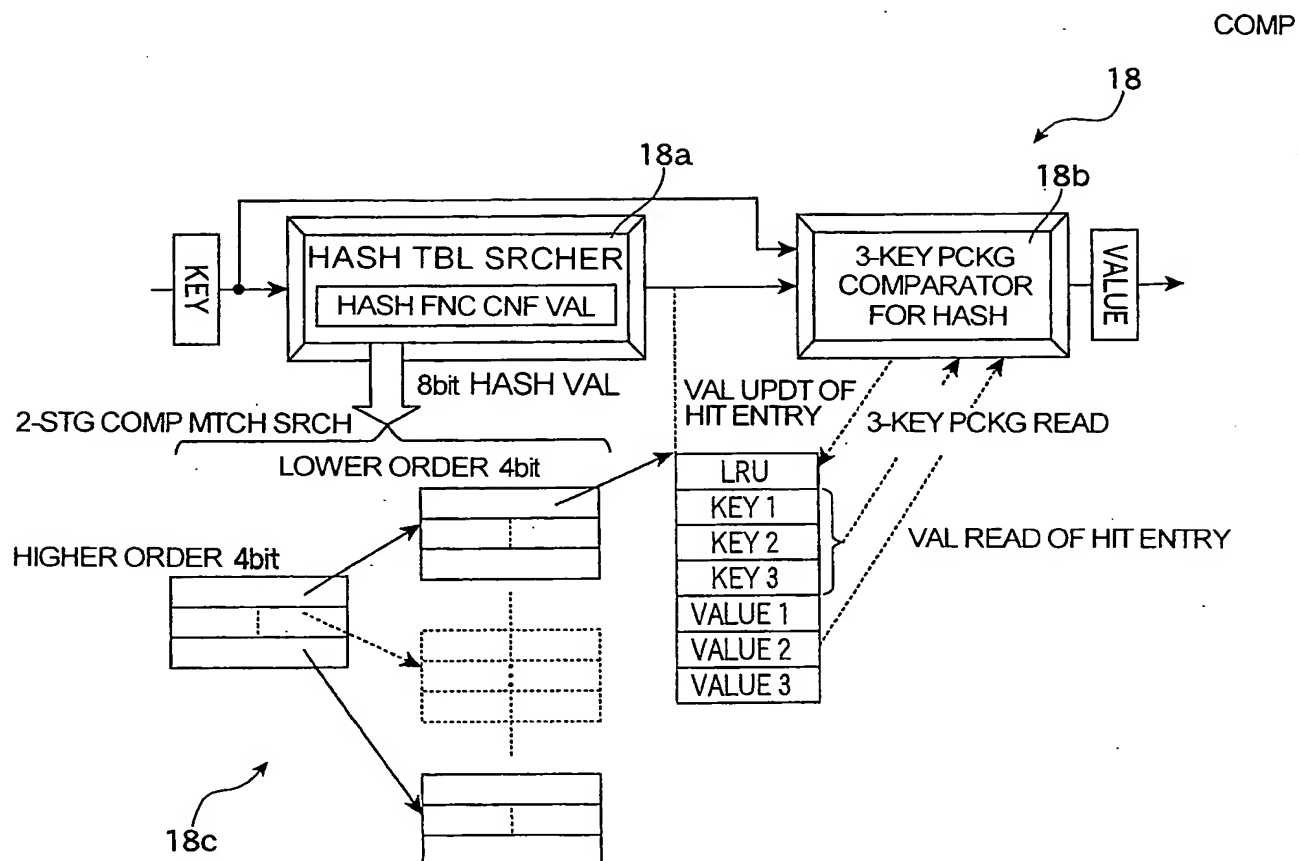
40 / 53

FIG. 57



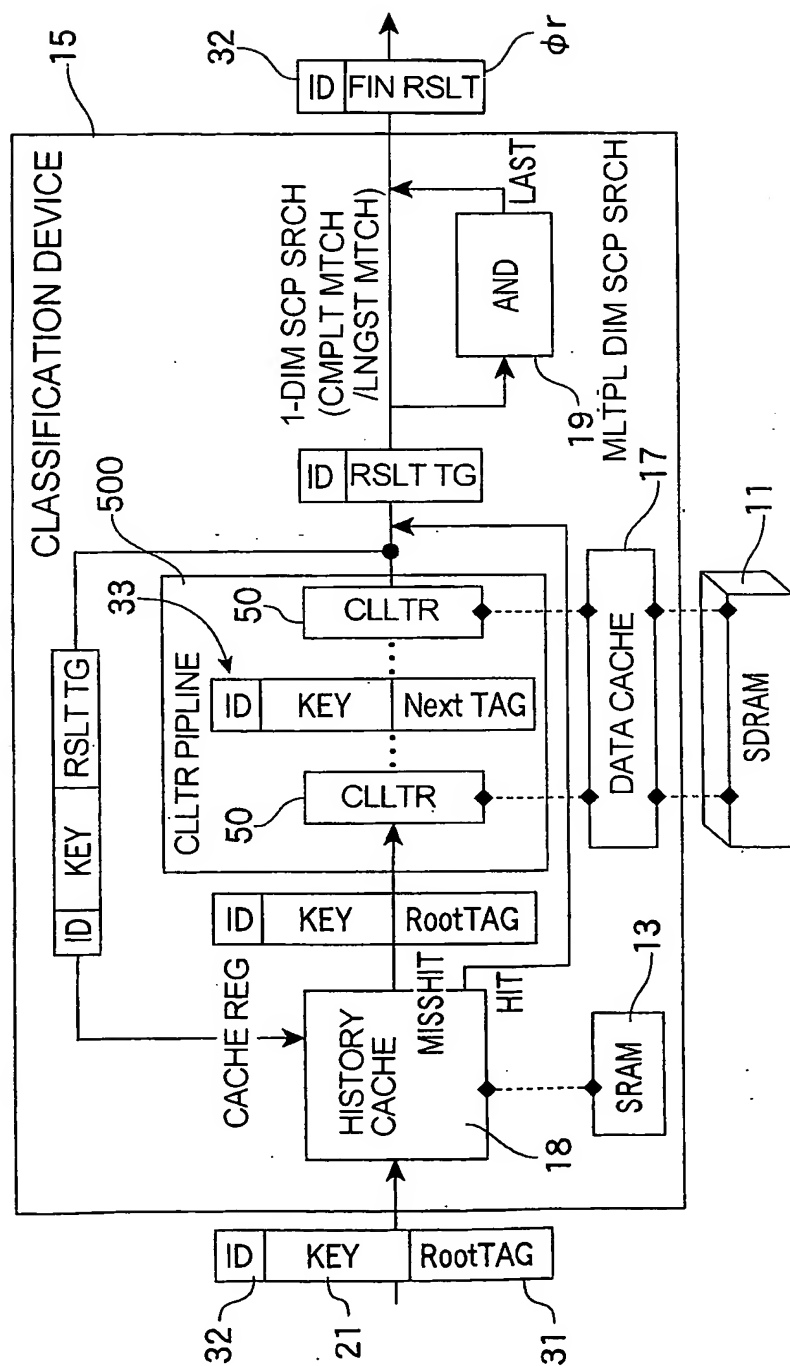
41 / 53

FIG. 58



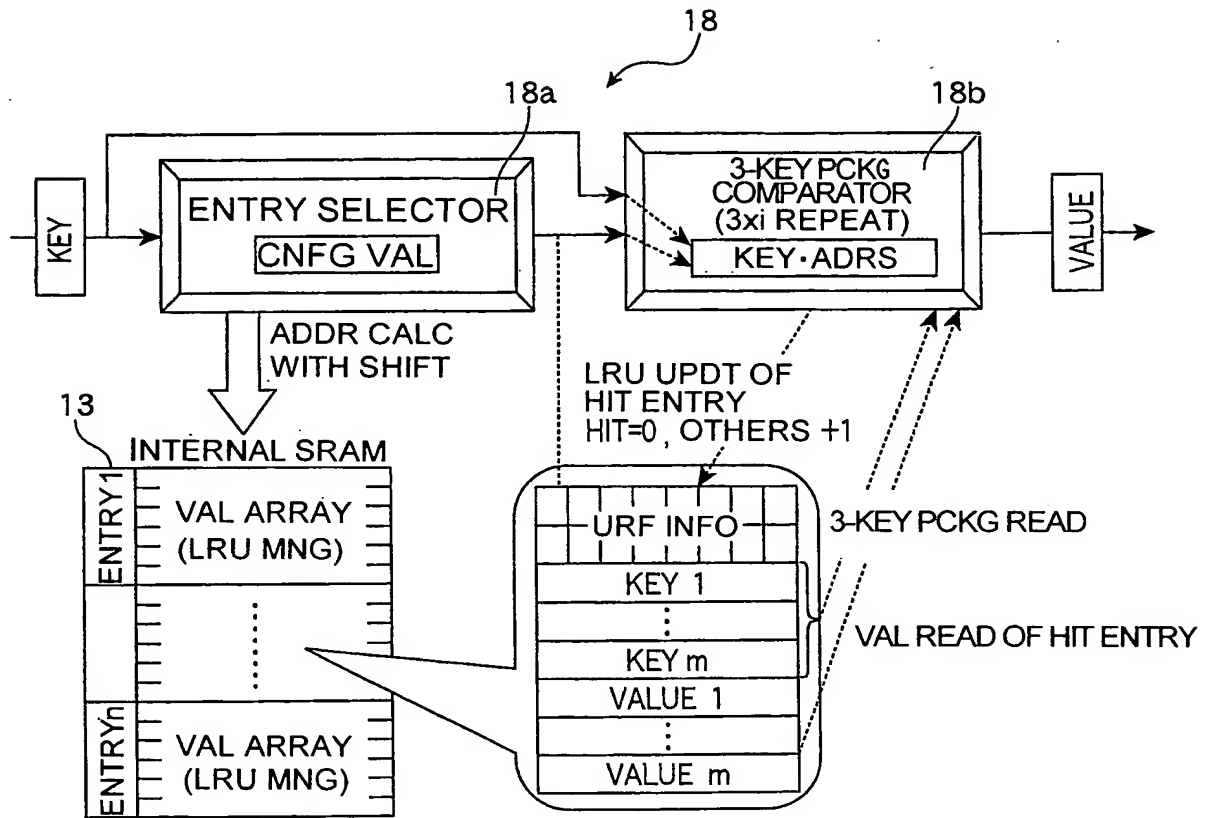
4 2 / 5 3

FIG. 59



4 3 / 5 3

FIG.60



4 4 / 5 3

FIG.61

$$\begin{array}{c}
 \text{MATRIX A} \\
 \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \end{bmatrix}
 \end{array}
 \times
 \begin{array}{c}
 \text{MATRIX B} \\
 \begin{bmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{bmatrix}
 \end{array}$$

$$= \begin{array}{c}
 \text{MATRIX Z} \\
 \begin{bmatrix} a_{11} * b_{11} + a_{12} * b_{21} + a_{13} * b_{31} \\ a_{21} * b_{11} + a_{22} * b_{21} + a_{23} * b_{31} \end{bmatrix}
 \end{array}$$

$\begin{array}{c} \text{A1 X B1} \\ \text{A2 X B1} \end{array}$

$$\begin{array}{c}
 \begin{bmatrix} a_{11} * b_{12} + a_{12} * b_{22} + a_{13} * b_{32} \\ a_{21} * b_{12} + a_{22} * b_{22} + a_{23} * b_{32} \end{bmatrix}
 \end{array}$$

$\begin{array}{c} \text{A1 X B2} \\ \text{A2 X B2} \end{array}$

$$\begin{array}{c}
 \begin{bmatrix} a_{11} * b_{13} + a_{12} * b_{23} + a_{13} * b_{33} \\ a_{21} * b_{13} + a_{22} * b_{23} + a_{23} * b_{33} \end{bmatrix}
 \end{array}$$

$\begin{array}{c} \text{A1 X B3} \\ \text{A2 X B3} \end{array}$

FIG.62

$$\begin{array}{c}
 \text{MATRIX Z} \\
 \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}
 \end{array}
 \begin{array}{l}
 \longrightarrow 1 \text{ or } 0 \text{ or } 0 = 1 \\
 \longrightarrow 0 \text{ or } 0 \text{ or } 0 = 0
 \end{array}$$

FIG.63

$$\begin{array}{c}
 \text{MATRIX X} \\
 \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \end{bmatrix}
 \end{array}
 \times
 \begin{array}{c}
 \text{MATRIX Y} \\
 \begin{bmatrix} b_{11} & b_{12} & \dots & c_{1i} & \dots \\ b_{21} & b_{22} & \dots & c_{2i} & \dots \\ b_{31} & b_{32} & \dots & c_{3i} & \dots \end{bmatrix}
 \end{array}$$

$$= \begin{array}{c}
 \text{MATRIX Z} \\
 \begin{bmatrix} a_{11} * b_{11} + a_{12} * b_{21} + a_{13} * b_{31} \\ a_{21} * b_{11} + a_{22} * b_{21} + a_{23} * b_{31} \end{bmatrix}
 \end{array}$$

$\begin{array}{c} \text{OP RESULT OF A AND B1} \end{array}$

$$\begin{array}{c}
 \begin{bmatrix} a_{11} * b_{12} + a_{12} * b_{22} + a_{13} * b_{32} \\ a_{21} * b_{12} + a_{22} * b_{22} + a_{23} * b_{32} \end{bmatrix}
 \end{array}$$

$\begin{array}{c} \text{OP RESULT OF A AND B2} \end{array}$

$$\begin{array}{c}
 \begin{bmatrix} a_{11} * c_{1i} + a_{12} * c_{2i} + a_{13} * c_{3i} \\ a_{21} * c_{1i} + a_{22} * c_{2i} + a_{23} * c_{3i} \end{bmatrix}
 \end{array}$$

$\begin{array}{c} \text{OP RESULT OF A AND C}_i \end{array}$

45 / 53

FIG.64

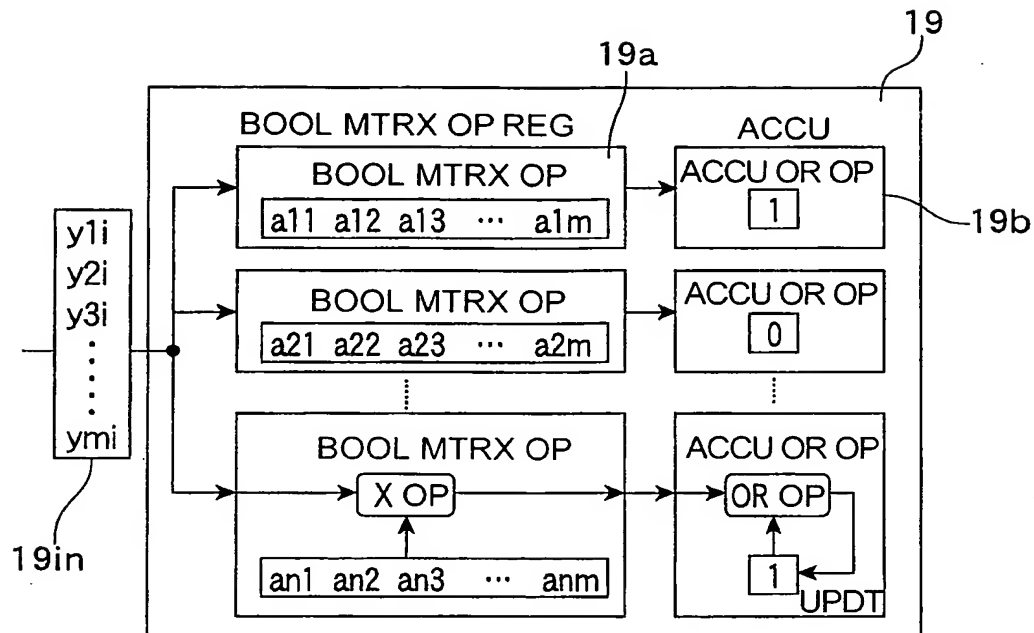
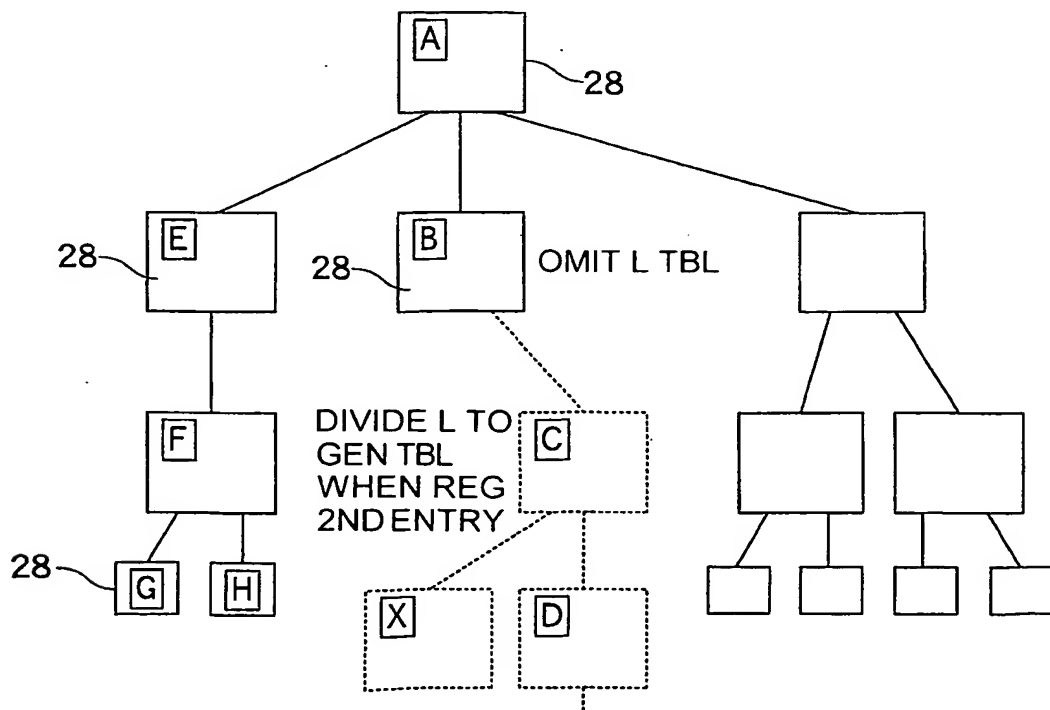


FIG.65



46 / 53

FIG.66

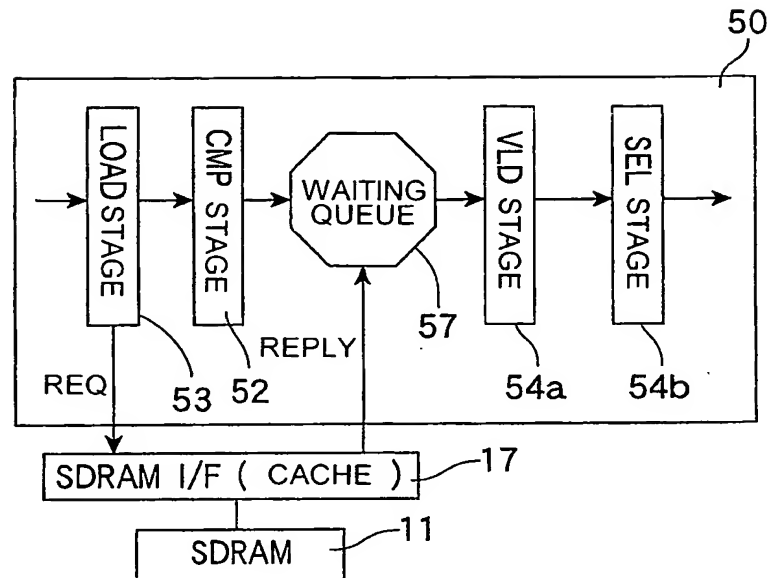
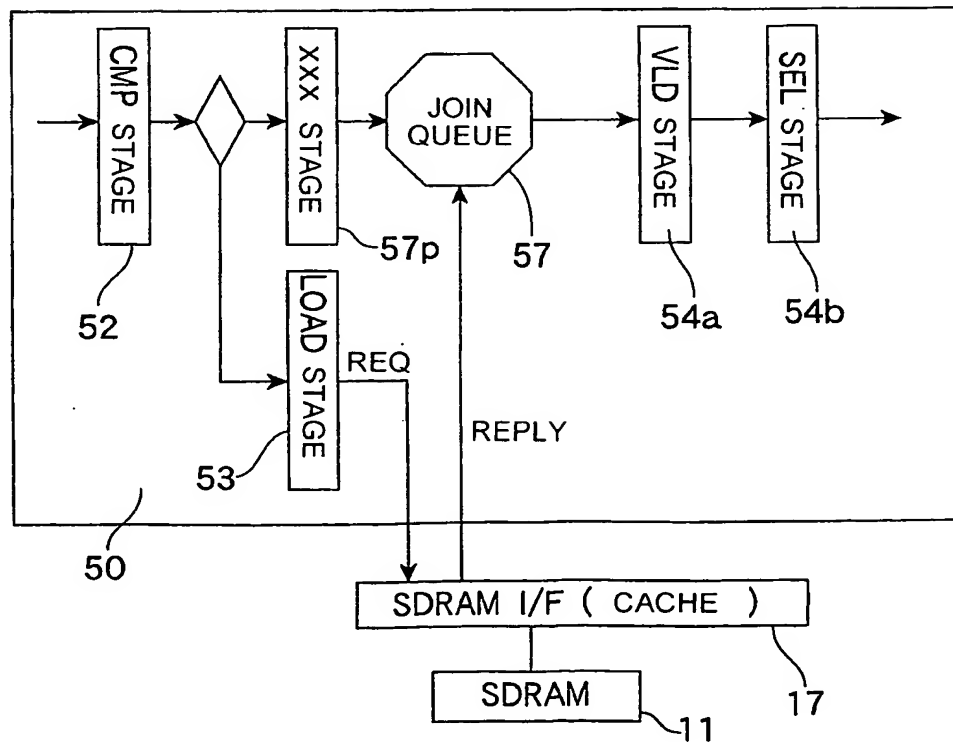


FIG.67



47 / 53

FIG.68

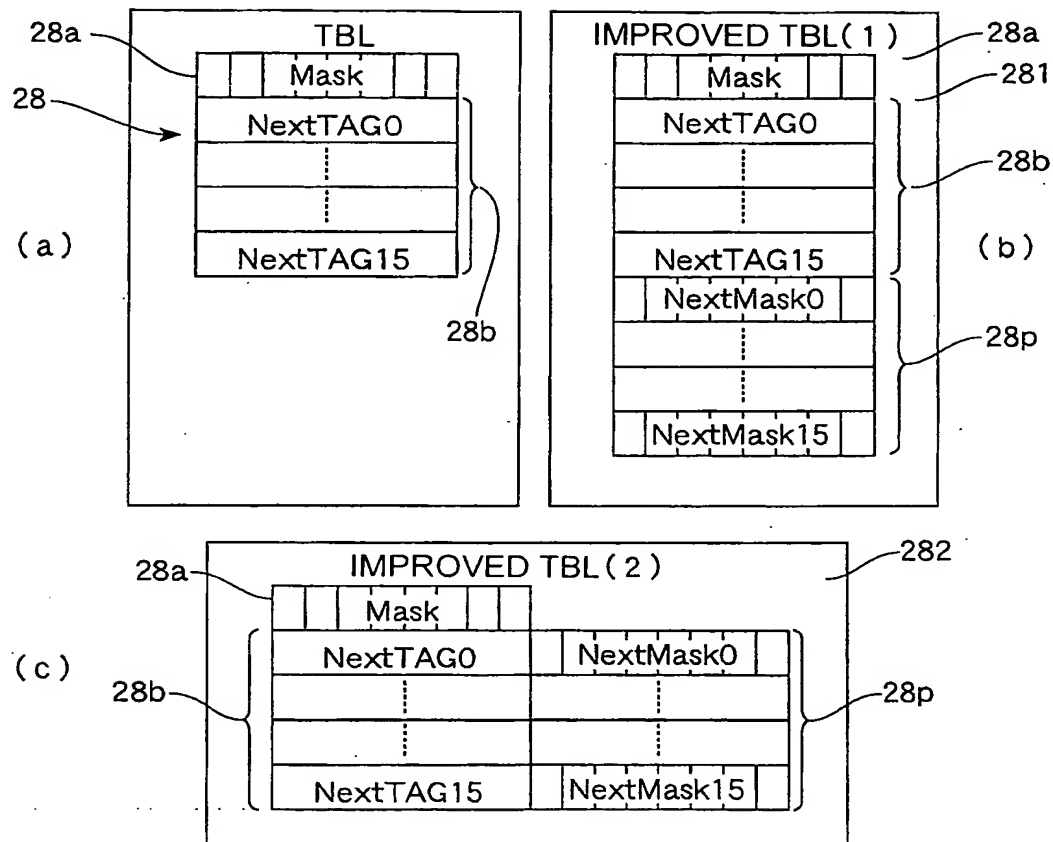
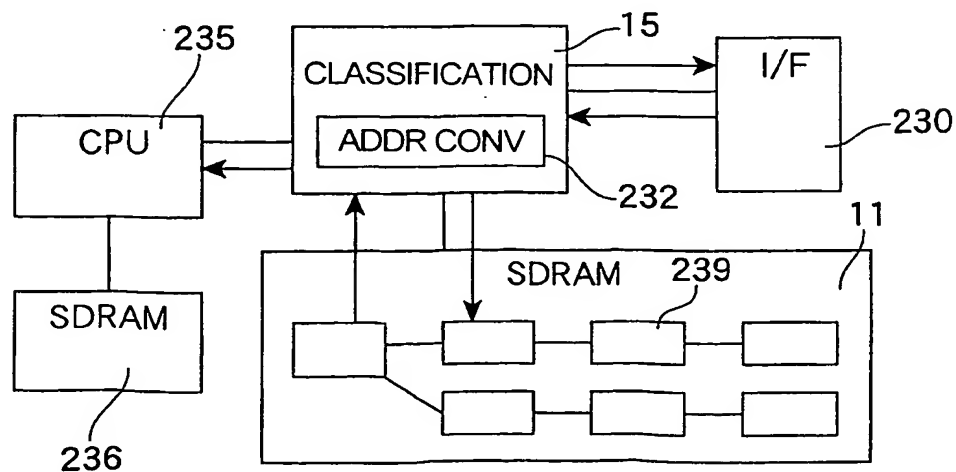


FIG.69



48 / 53

FIG.70

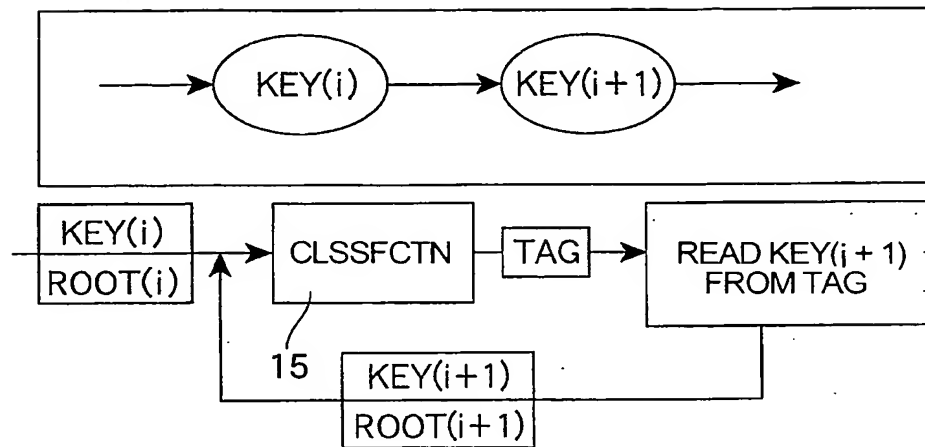
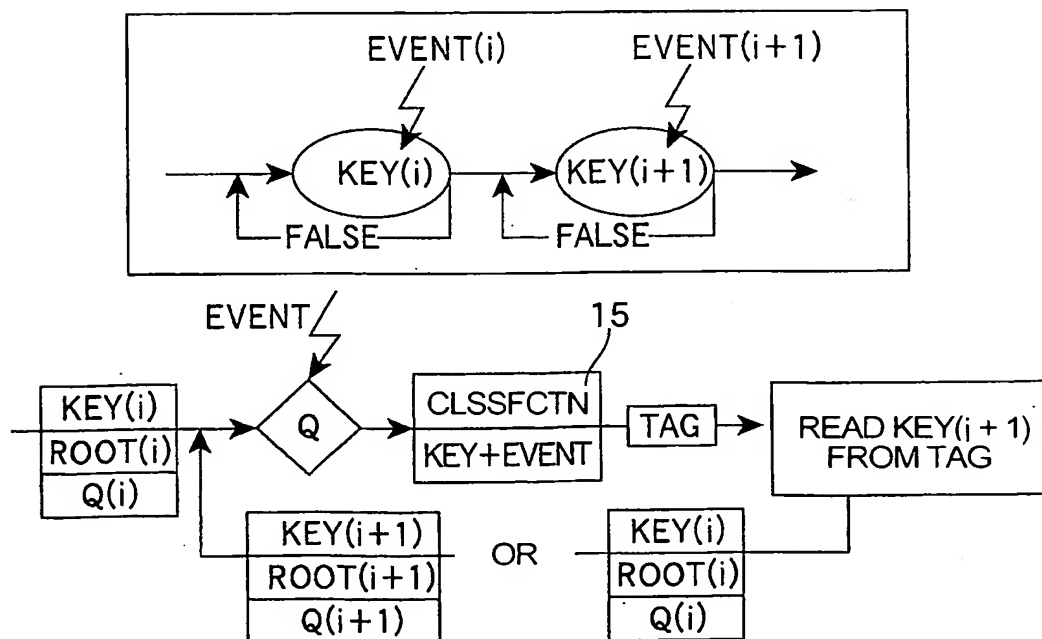


FIG.71



49 / 53

FIG. 72

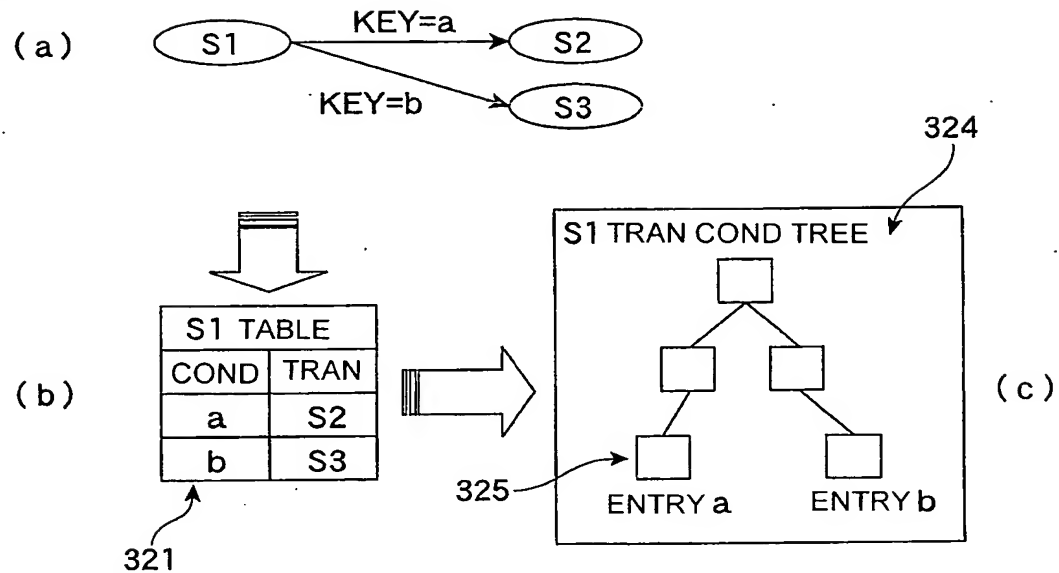
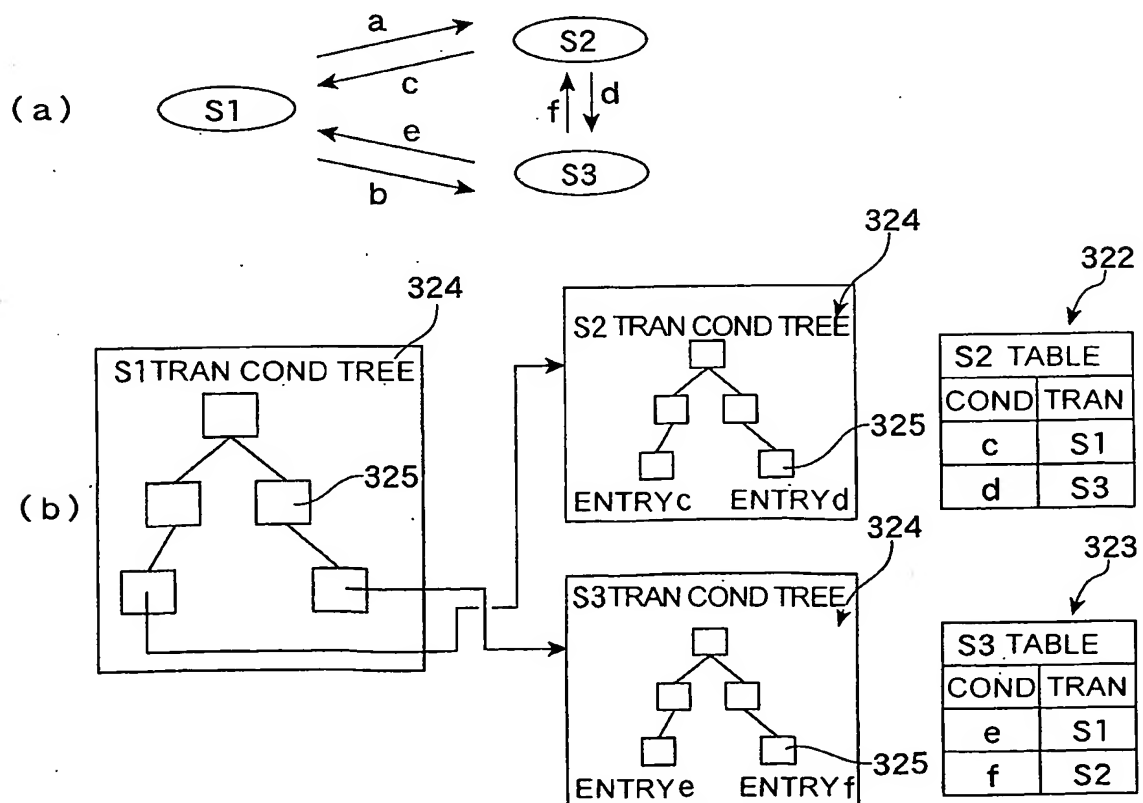
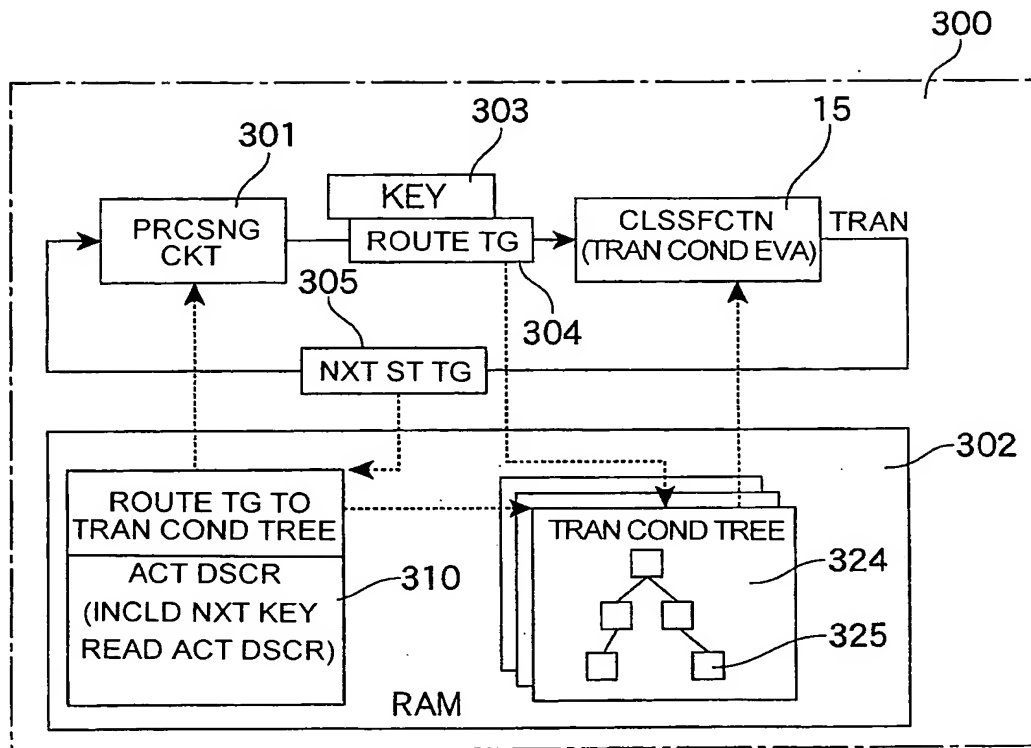


FIG. 73



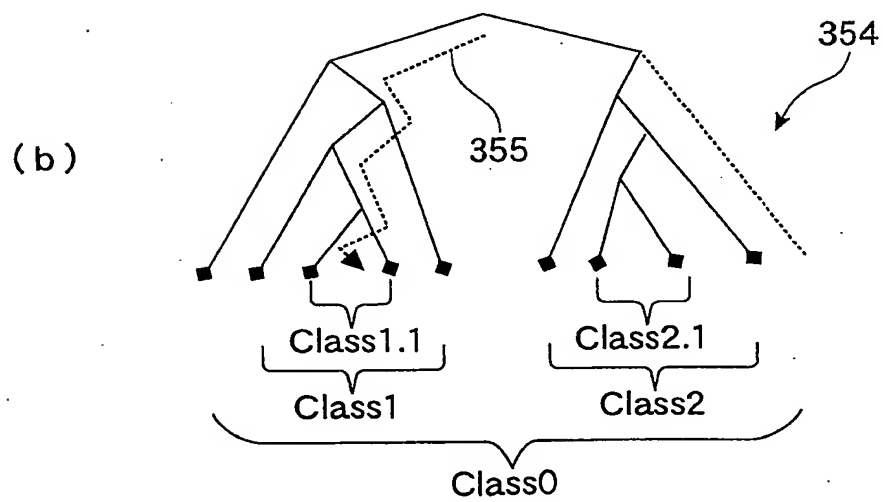
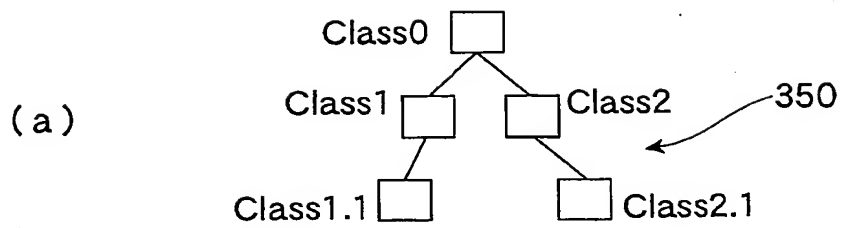
50 / 53

FIG.74



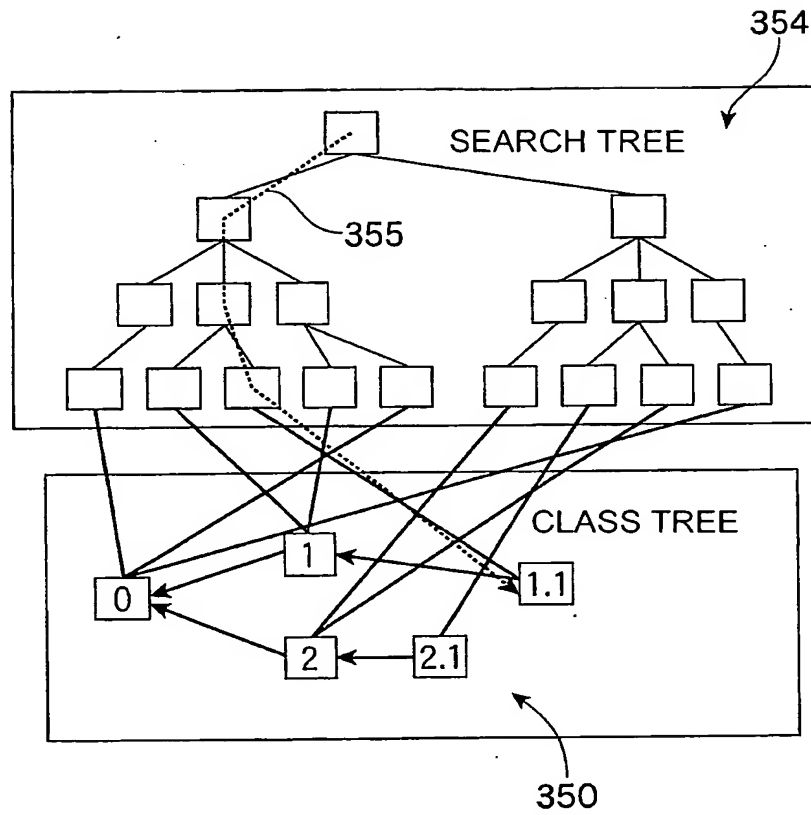
5 1 / 5 3

FIG.75



5 2 / 5 3

FIG. 76



53 / 53

FIG.77

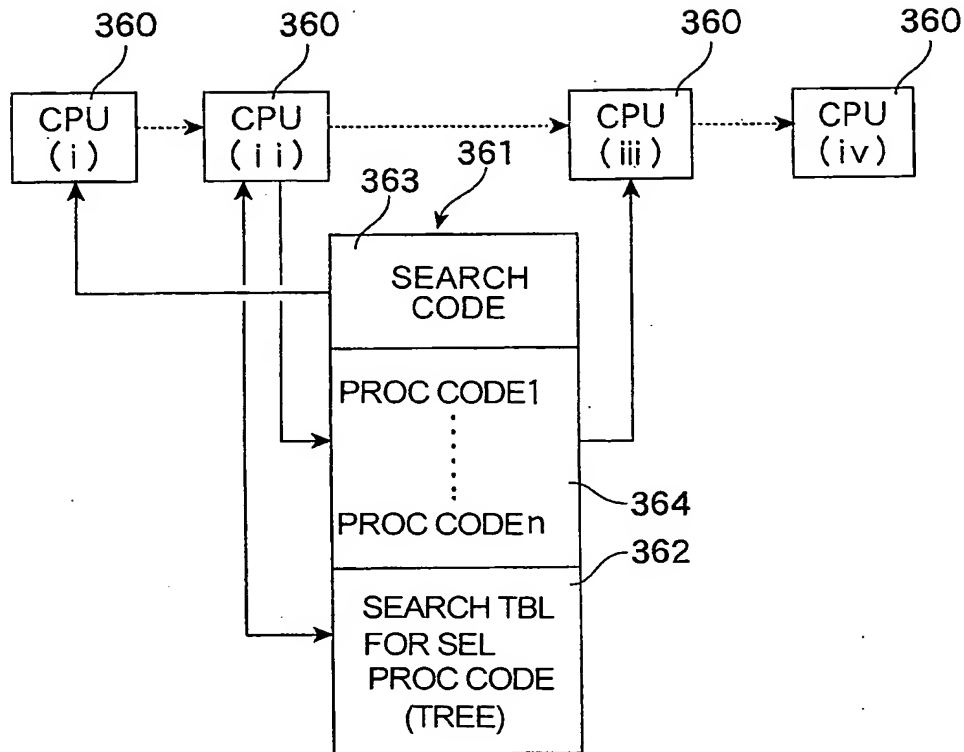


FIG.78

